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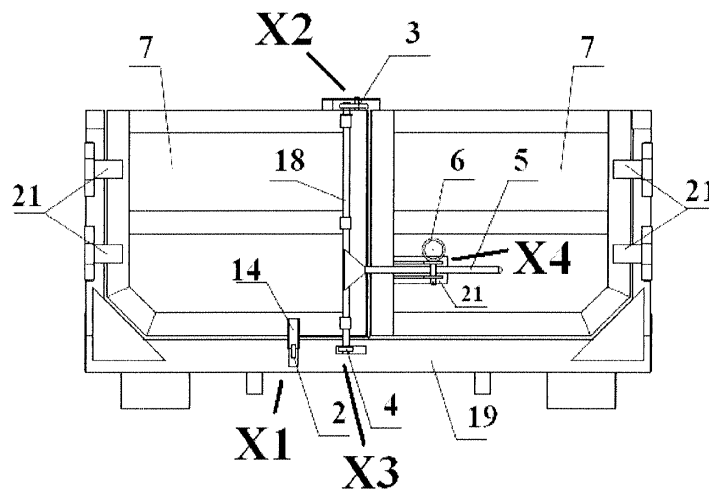
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(54) **Cargo container with a doors locking mechanism and method of closing the doors of such a container**

(57) The goal of this invention is improved and safe locking mechanisms, i.e. constructions of a lower automatic and an upper improved locking mechanisms that are designed for protection against deformation of doors in cargo containers, as well as a method of usage of the lower automatic locking mechanism that is designed to make a driver's work easier. Trying to strengthen and protect container doors from deformation, it is offered to use an automatic lower locking mechanism instead of an additional standard lower locking mechanism, and to use an improved upper locking mechanism instead of a standard upper locking mechanism. The essence of the

lower automatic locking mechanism is a construction, which automatically locks up when container doors are pushed to close. The usage of the lower automatic locking mechanism makes a driver's work easier, as it is easier and more comfortable for a driver to close doors and locking mechanisms and not to care about the closing of the lower automatic locking mechanism. The essence of the upper improved locking mechanism is a construction, which in the locked up state, when the pressure from the inner space of a container is periodically changing, adapts to the pressure differences and not only performs the function of the lock, but also protects container doors and container sides against deformation.



**Fig. 2**

## Description

### FIELD OF THE INVENTION

**[0001]** The present invention relates to various mechanisms in cargo transporting that are used for loading and unloading cargo. This invention is related to cargo containers, doors of cargo containers and especially to additional strengthening improvements of containers, container locking mechanism and control mechanisms that are used in cargo containers for opening and closing doors and for protection against deformation.

### BACKGROUND OF THE INVENTION

**[0002]** Metal cargo container is one of the most commonly used tools, which can be used for compact and comfortable placing and accumulation of industrial waste and resources and which later can be comfortably and safely transported by ships, planes or cargo trucks.

**[0003]** The related Japanese patent No. JP2004017926 has been published on 22 January, 2004. This patent provides a container fastening mechanism in a container cargo work vehicle in which a container can be stably held on a vehicle body even in the container cargo work vehicle not sliding the container when loading and unloading the container. The fastening mechanism includes a fastening member, an operating lever and a connecting member. The operating lever performs loading and unloading function. The fastening member fastens the container to the vehicle body. The operating lever connected to the fastening member via connecting mechanism ensures fastening of the container and its release in respect to the vehicle's body. However, this solution does not analyse problemacy of opening and closing container doors and it does not analyse possibilities of strengthening the container.

**[0004]** The related American patent No. US2006290147 was published on 28 December, 2006. This patent provides a cargo seal assembly of a cargo container, which is designed to protect the container from unwanted breakage or theft. This closing construction comprises an elongated flexible material segment having a distal end, a proximal end and an intermediate portion extending therebetween, as well as a lock body attached to the flexible material at two separate, spaced apart locations. The flexible material is in surrounding relation to the standard lock rods, when tightened and locked it prevents opening of a cargo container door. However, this patent does not deal with possibilities of strengthening doors of cargo container. It also does not deal with locking constructions of containers, which are designed to close and to strengthen a container door.

**[0005]** One more related American patent No. US3796397 was published on March 12, 1974, which deals with a retractable cargo container latch assembly for securing cargo containers or pallets to the seat-tracks in the floor of an aircraft compartment. The latch mech-

anism comprises a pair of rotatable latch arms, each having a vertical restraint lip integral therewith in combination with a spring-loaded pawl for securing the latch-head assembly in the upright extended cargo engaging position.

Even though this invention uses the latch mechanism, however the technical solution only deals with securing a container to the external stable base.

**[0006]** Another related American patent No. US2005126235 was published on June 16, 2005. This patent provides a construction and a method for strengthening and protection of container doors against unauthorised opening, when a container is moving vertically (lifted up or lowered down). This construction comprises a hook-form and key-form elements. One part of a hook form element is attached to the door of a container, while the other to the base of a container. One part of a key-form element is attached to the door of a container, while the other to the fixed catching element, which is mounted on the surface of the door and the ending of the key-form element is being inserted into the space, which is formed by the fixed catching element. This technical solution strengthens and protects cargo container doors against unplanned or unwanted openings due to the pressure of the cargo to the doors from the inside. However, this locking construction is uncomfortable and complicated, as it is difficult to release or lift the hook when the surface of the door is bent due to the high pressure from the inside.

**[0007]** The closest European patent for this technological level is EP 1460218, which was published on September 22, 2004. The patent provides a container fastening construction that is designed to secure a container on the vehicle body. Besides, this construction does not allow unwanted opening of a cargo container door. For this purpose, a mobile bolting construction is integrated at the side of the vehicle. The base of this mobile bolting construction comprises a latch, a spring and a dead point linkage to the cab of a truck. Therefore, during the bad weather (or just for the comfort of a driver), a driver can release a container from the platform of a vehicle, in order to allow lifting a container by the help of outside tools (e.g. crane), without stepping out of the cabin. A driver can do it by using the above mentioned dead point linkage mechanism, thus initiating the release of a container from a latch. This technical solution is oriented toward the comfortable operation, but it does not solve problematic cases connected to the locking systems of a container door and to the deformation of a container door.

**[0008]** One of the main problems that arise when working with cargo containers is a container door deformation. Even small deformations of a container door may pose serious problems, as it becomes more difficult to open and especially to close a container door. Deformations of a container door are caused by the inner movement of cargo inside the container (due to the inertia), especially when the cargo consists of loose material (sand, coal, waste and similar). Presently used locks and latch systems for locking and fastening a container door do not prevent from door deformation. Usage of existing

constructions requires from drivers to be very attentive and to strictly apply appropriate procedures. Quite frequently due to a human factor, drivers forget to perform one or other important operation and thus quite frequently a door of a container needs to be repaired. Clearly, this is not desirable, it is expensive and uncomfortable, especially on the way during the execution of an order.

#### SUMMARY OF THE INVENTION

**[0009]** Presently four constructions are used for locking up container doors:

- upper standard locking mechanism, designed to fix and fasten a door to the upper part of a container;
- lower standard locking mechanism, designed to fix and fasten a door to the lower part of a container;
- middle standard lock, designed to fasten a rod, to which the above mentioned upper and lower standard locks are attached; and
- lower additional lock mechanism, designed additionally to fasten a container door to a container's lower part (base).

**[0010]** The innovative nature of this invention is that a construction is designed to strengthen and protect a container door against deformations and to ease the work of drivers. It is offered:

- Instead of lower additional locking mechanism to use other construction (further this construction will be called lower automatic locking mechanism); and (additionally)
- Instead of upper standard locking mechanism to use other construction (further this construction will be called upper improved locking mechanism).

**[0011]** The essence of the lower automatic locking mechanism is a special construction (detailed description is given in the implementation part), which automatically locks up when container doors are pushed to close. The usage of the lower automatic locking mechanism allows to achieve essentially new quality: it is easier and more comfortable for a driver to lock a container door, it is easier and more comfortable for a driver to close all other remaining locking mechanisms, and it allows a driver to cross out one operation from a list of safety procedures (starting a mechanism on a container's side wall), which is done by the new locking system automatically, and thus the human factor problem is resolved.

**[0012]** The essence of the upper improved locking mechanism is a special construction (detailed description is given in the implementation part), which in the locked up state, when the pressure from the inner space of a container is periodically changing, adopts to the pressure differences and not only performs the function of the lock, but also protects container doors and container sides against deformation.

**[0013]** The goal of this invention is improved and safe locking mechanisms, i.e. (constructions) which much better (in comparison with the current technological level) protects a cargo container's (metal) side walls and doors (especially doors) from deformation, that may occur during the transportation of different cargo types (especially loose material). The other goal of this invention is the usage of improved mechanisms, in order to simplify and to make the work easier for drivers, who work with cargo containers.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0014]**

Fig. 1 depicts a schematic side view of a cargo container,

Fig. 2 depicts a schematic front view of a cargo container as viewed from the doors (doors are usually opened from inside to outside and typically they are installed at a container's end;

Fig. 3 depicts a detailed view of the lower automatic locking mechanism (construction), where geometry of the lower automatic locking mechanism can be seen. The mechanism allows container doors to lock up automatically and make a driver's work easier.

Fig. 4a depicts the operating principle of the lower automatic locking mechanism, when doors are closed (start of the closing process).

Fig 4b depicts the operating principle of the lower automatic locking mechanism, when doors are closed (the doors have almost locked up, but they still have a possibility to return back).

Fig 4c depicts the operating principle of the lower automatic locking mechanism, when doors are closed (the doors have completely locked up).

Fig. 5 depicts the upper improved locking mechanism (construction).

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

**[0015]** Transportation of cargo is one of the most important and oldest of human activities. Even though many new technologies have been developed, however the essential principles of cargo transportation have not changed a lot. Presently, one of the main ways of cargo transportation is the usage of cargo vehicles, which deliver metal containers (or containers made from other materials) with the loaded cargo to the endpoints of delivery. The transportation of the containers is related with many operations: placing of the container onto the vehicle, removing of the container from the vehicle, transportation of the container from one place to the other, loading and unloading the container etc. Practice has shown that the most vulnerable construction is the one that comprises moving or rotating parts, also the one that is affected repeatedly by external or inertive forces. The vulnerable point of this construction is the door, which is needed for

loading and discharge of the cargo. Due to the cargo's inertion, the doors are repeatedly affected by pressure. Therefore, it has been noticed that it is not sufficient to have only standard upper and lower locks for closing a container's door. For this purpose an additional lower locking mechanism has been constructed, which gives additional support for the doors and strengthens them. Thus, as it has been mentioned earlier, presently four constructions are used for locking a container's door: upper standard locking mechanism, designed to fix and fasten a door to the upper part of a container; lower standard locking mechanism, designed to fix and fasten a door to the lower part of a container; middle standard lock, designed to fasten a rod, to which the above mentioned upper and lower standard locks are attached; and lower additional lock mechanism, designed additionally to fasten a container door to a container's lower part (base). However, the usage of the additional lower locking mechanism is not very comfortable, as this mechanism during the procedure of closing the door needs to be separately activated from the side of a container after the fixation of standard upper and lower locking mechanisms. That is an extra important action, which sometime is disregarded by drivers. Besides, drivers often simply forget activating this additional lower locking mechanism due to a human factor. This mistake may cause serious container door deformations, as well as deformations of locking mechanism that are hard (or impossible) to repair, when a container is unloaded from the transport vehicle and put on the hard surface, e.g. on the asphalt (in this case, the "sharp" weight damages the surface).

**[0016]** When using these existing locking mechanisms, the order of opening the doors of a container is the following:

- middle standard lock is being opened;
- by using a handle that is connected to a rod, and turning this rod around its axis towards himself, the standard upper and lower locks are being unlocked (released);
- by using the starting mechanism for the lower additional lock, which is typically mounted on the side wall of a container, the lower additional lock is being put down;
- by pulling the handle of a rod towards himself, one part of the doors (most frequently the left) is being opened;
- the second part of the door remains free, thus it can be opened with a hand.

**[0017]** When using the existing locking mechanisms, the order of closing the doors of a container is the following:

- by using a physical force one part of the door (which is without a handle) is pushed towards a container until it presses up to the frame of a container;
- by using a physical force and pushing the handle of

the rod from himself towards a container, the other part of the door is also being pushed until it presses up to the frame of a container;

- by using a handle that is connected to the rod and turning the rod from himself to the right, standard upper and lower locking mechanism are being locked up;
- by using the starting mechanism for the lower additional lock, which is typically mounted on the side wall of a container, the lower additional lock is being lifted up.

**[0018]** The practice shows, that even the small deformation of the door makes it harder to close the door of a container, i.e. more and more physical force is needed for the action. When it is difficult to close the door during the travel, often hammers and metal sticks are being used to solve the difficult situation. During the execution of a commercial order, such unplanned circumstances and situations are very undesirable. In order to solve these problems, this invention present improved locking mechanisms (X1 and X2): lower automatic locking mechanism (X1) and upper improved locking mechanism (X2). The innovation of this mechanism is its ability to strengthen and protect the doors of a container against deformations and to make a driver's work easier:

- instead of the lower additional locking mechanism to use the lower automatic locking mechanism (X1); and
- instead of the upper standard locking mechanism to use the upper improved locking mechanism (X2).

**[0019]** Fig. 1 and Fig. 2 depict the construction of a cargo container (1), where the new technical solution is being implemented. Fig. 1 depicts a schematic side view of the cargo container (1), while Fig. 2 depicts a schematic front view of the cargo container (1) from the side of the doors (7). A (metal) cargo container (1) is comprised of: a door (7), hinges (21), a lower automatic locking mechanism (X1), an upper improved locking mechanism (X2), a lower standard locking mechanism (X3), a middle standard locking mechanism (X4), a rod of locking mechanisms (X2,3 and X3,4), the base of the container (19). The lower automatic mechanism (X1) is comprised of: a lock (2), an ending of the lock (14), a spring (13), a rod (9), a side handle (8), and a chain (15). The middle standard locking mechanism (X4) comprises of: a rod (18), a handle of the rod (5), and a fixer (6). Typically container doors (7) are opened from inside to outside and comprise of two parts: the right (7b) and the left (7a). Each part of the doors (7), appropriately the left (7a) and the right (7b) is mounted to the appropriately the left and the right side walls of the container (1) by the help of hinges. The hinge (21) also is used in the construction of the middle standard locking mechanism (X4), as it fixes the mentioned mechanism (X4) to the surface of the container door. The upper (3) and lower (4) locks are de-

signed for mechanical locking and unlocking the doors of the container. The upper improved mechanism (3) and the lower standard lock (4) are connected therebetween via the locking rod (18), which can be rotated around its own axis by using the handle of the rod (5). When in the closing position the mentioned handle of the rod (5) is fixed by the fixer (6).

**[0020]** Fig. 3 depicts the detailed view of the lower automatic locking mechanism (X1), comprising of: a lock (2), a spring (13), a connecting element (10), a rod (9), a side handle (8), a lock ending (hook) (14), a chain (15), a rotating axis of a lock (11) and a rotation rod axis (12). The exclusive element of the lower automatic locking mechanism (X1) is the hook (14), which construction is special in the way, that when pushing the door (7) towards the inside of the container (1) the spring (13) is activated, and the door (7) locks up and fixes up automatically. The operation principle of the lower automatic locking mechanism (X1) is such: the lock (2) together with the connecting element (10) are tightly connected with the rotating axis of the lock (11), which is fixed to the base of a container (19). The rotating axis of the lock (11) is rotating together with the connecting element (1).

**[0021]** The connecting element (10) is also connected to the rod (9) via the rotating axis of the rod (12), which is activated by moving (down) the side handle (8), which is fixated by the chain (15). The side handle (8) is located near the side of the container and it is distanced at minimum of 1.5 m (15,000 mm) from the surface of the door (7) of the container (1) (this distance to be measured from the surface of the door in the closed position). Such location of the handle (8) is necessary, in order to protect a driver from an accident due to the sudden opening of the door (7), when the handle (8) is pressed down and the lower automatic locking mechanism (X1) is released. The door (7) may unexpectedly and widely (even up to 270 degrees) open due to the high pressure from the inside of the cargo to the door (7) of the container (1). The spring (13) connects the connecting element (10) with the frame of the container (1). The spring (13) performs the return function and all the time tries to keep the lock (2) in the closed (locked up) position. The connecting element (10) connects the rod (9) and the lock (2) via the rotating axis of the lock (11) and the rotating axis of the rod (12) and transfers the moment of rotation from the rod (9) to the lock (2). The rotating axis of the lock (11) connects the connecting element (1) with the lock (2). The rod (9), one ending of which is connected to the connecting element (10) via the rotating axis of the rod (12) and the other ending is connected with the side handle (8), performs the release function of the lock (2). The rotating axis of the rod (12) connects the connecting element (10) with the rod (9). The side handle (8), which is connected to the rod (9), allows transferring the motion of pulling and pushing to the rod (9). The chain (15) protects the side handle (8) from the self-contained moving down.

**[0022]** Fig. 4a depicts the principle of operation of the

lower automatic locking mechanism (X1), when the door (7) is being closed (starting phase of the door (7) closing). During the starting phase of closing of the door (7) the lower part of the door presses down the lock (2) on the point (A). When the door (7) is further moved towards the (N) direction, the mentioned lock (2) moves further down towards the (K) direction.

**[0023]** Fig. 4b depicts the principle of operation of the lower automatic locking mechanism (X1), when the door (7) is being closed (the door (7) is almost locked up, but there is still a possibility to move back). This position depicts a situation, when pushing the door (7) further towards the (N) direction, the lower part of the door (7) reaches the end point of its movement at the point (B). In this case, the lock (2) is in its lowest vertical position.

**[0024]** Fig. 4c depicts the principle of operation of the lower automatic locking mechanism (X1), when the door (7) has been closed (the door (7) is locked up). This position depicts a situation, when pushing the door (7) further towards the (N) direction, the lower part of the door (7) is passing the point (B) and reaches the point (C). In this case the lock (2) is being released because of the force of the spring (13), and it is lifted up towards the (K) direction. This moment is the automatic locking up of the doors.

**[0025]** When using the invention of the lower automatic locking mechanism (X1), the order of opening the doors of the container (1) is almost identical to the earlier mentioned order of the lower standard additional locking mechanism:

- by using the start mechanism of the lower additional lock (X1), which is typically mounted on the side wall of the container, the lock (2) is being put down;
- the middle standard lock is being opened (6);
- by using the handle (5) that is connected to the rod (18), and turning this rod (18) around its axis towards himself, the upper improved (3) lock and the lower standard lock (4) are being unlocked (released);
- by pulling the handle (5) of the rod (18) towards himself, one part of the doors (most frequently the left) is being opened;
- the second part of the door (7) remains free, thus it can be opened with a hand.

**[0026]** However, when using the invention of the lower automatic locking mechanism (X1), the order of closing the doors of the container (1) has essentially changed. It becomes simpler and more comfortable:

- by using a physical force one part of the door (which is without a handle) is pushed towards the container until it presses up to the frame of the container;
- by using a physical force and pushing the handle (5) of the rod (18) from himself towards the container (1), the other part of the door (7) is also being pushed towards the frame of the container (1) until it locks up with the lock (2);

- by using a handle (5), which is connected to the rod (18), and turning the rod (18) from himself to the right, the upper improved locking mechanism (3) and the lower standard locking mechanism (4) are being locked up;

**[0027]** Fig. 5 depicts the upper improved locking mechanism (X2), which construction is special in the way, that in the closed state (position) when affected by the changing intensity of pressure from the inside of the container (1) due to the cargo's "rocking", it (the mechanism) adopts to the pressure differences and it does not only perform the function of the lock but also protects the door (7) and the sides of the container (1) from deformations. It has been observed, that when transporting a cargo, especially if the cargo is loose material (sand, coal, loose waste and etc.), the cargo is acting similarly as the water, i.e. it is "rocking". Such cargo's behaviour is very negatively affecting the doors (7) of the container (1) and often deforms them. In order to neutralize this negative effect, this invention provides the upper improved locking mechanism (X2), which is comprised of the following parts of construction: a rod (18), a rounded "7" form hook (22), the left side of the door (7(a)), the right side of the door (7(b)), a finger (16) and a striker (17). As it was mentioned earlier, the upper improved locking mechanism is being closed and opened by using the handle (5) that has a stable connection to the rod (18), to which are connected the upper improved locking mechanism and the lower standard locking mechanism. The door (7) is mechanically fixated by using the rod (18), while turning it around its own axis with the handle (5). The central part of the rod (18) is connected to the handle (5), and its upper end with the rounded "7" form hook (22), in order to rotate the mentioned hook (22) around its own axis. The hook (22) is connected to the rod (18), where during the closing phase of the door (7) the mentioned hook (22) is put (is hooked) on the finger (16). The finger (16) is firmly connected to the striker (17), and the finger (16), when the cargo exerts the pressure to the door (7), is being pushed towards the (y) direction, however it does not move due to the "L" form bend in the surface of the mentioned hook (22). Also the mentioned finger (16) is pushed towards the (x) direction, however it does not move due to the striker (17), which is firmly connected to the door (7). The striker (17) is firmly connected to the door and does not allow the finger (16) to move towards the (x) direction. In this way, the invention of the upper improved mechanism (X2) not only performs the function of the lock, but it also protects the doors (7) and the side walls of the container (1) from deformations.

**[0028]** In order, to present this invention, descriptions of the most appropriate methods of implementation are presented above. However, this is not complete or limiting invention, which tries to define the exact form or the method of implementation. The above presented description should only be viewed as an illustration, but not as limitation. Clearly, many modifications and variations

may be obvious to field specialists. The methods of implementation are selected and described with the purpose to present them to field specialists, who can in the best possible way to explain the principles of this invention and to choose the best possible way of usage for different ways of implementation with different modifications, that are suitable for certain usage or for the adaptation of the implementation, whereas in specific situations quantitative measurements of this mechanism may differ. It should be noted, that the scope of the invention is defined with the added definition and its equivalents, where all the mentioned terms are meaningful in the broad sense unless specifically noted. It must be admitted, that changes can be presented within the scope of this invention in the variants of this implementation described by the field specialist, so as it defined in the following definition.

## Claims

1. A cargo container that is designed for the storage and transport of various type of cargo, comprising

- the upper standard locking mechanism that is designed to fix and attach the doors to the header of the container;
- the lower standard locking mechanism that is designed to fix and attach the doors to the base of the container;
- the middle standard locking mechanism that is designed to fix the rod, to which the upper and the lower standard locking mechanisms are attached;
- and
- the lower additional locking mechanism that is designed additionally to fix the doors to the base of the container;

## characterized in that

instead of the lower additional mechanism is used the lower automatic locking mechanism (X1), comprising:

the lock (2), the ending (14) of which has a special geometry, such that when pushing the door (7) towards the inside of the container (1) the spring (13) is activated, and the door (7) locks up and fixes up automatically,

where

- during the starting phase of closing of the door (7) the lower part of the door presses down the lock (2) on the point (A), when the door (7) is further moved towards the (N) direction, the mentioned lock (2) further moves down towards the (K) direction;
- when further pushing the door (7) towards the (N) direction, the lower part of the door (7) reach-

es the end point of its movement at the point (B); in this case, the lock (2) is in its lowest vertical position;

- when further pushing the door (7) towards the (N) direction, the lower part of the door (7) is passing the point (B) and reaches the point (C), then the lock (2) is being released because of the force of the spring (13), and it is lifted up towards the (K) direction; this moment is the automatic locking up of the doors;

the spring (13), which is connected to the connecting element (10) and to the frame of the container (1), which is constantly affecting (lifting) the ending (14) of the lock towards the (K) direction; the connecting element (10) connected to the rod (9) and the lock (2) via the rotating axis of the lock (11) and the rotating axis of the rod (12), which transfers the sliding motion from the rod (9) to the lock (2);

the rotating axis of the lock (11) connecting the connecting element (10) with the lock (2);

the rod (9), one ending of which is connected to the connecting element (10) via the rotating axis of the rod (12) and the other ending is connected with the side handle (8), where by pulling the rod (9) the release function of the lock (2) is performed; the rotating axis of the rod (12), which connects the connecting element (10) with the rod (9);

the side handle (8), which is connected to the rod (9), and which allows to transfer the motion of pulling and pushing to the rod (9) with the help of the hand; and

the chain (15), which protects the side handle (8) from the self-contained moving down;

enabling:

the release of the container door by using the handle (8) and / or locking up the door (7) of the container (1) by pushing the door (7) towards the (N) direction.

2. The cargo container according to claim 1, **characterized in that** instead of the upper standard locking mechanism is used the upper improved locking mechanism, comprising:

the door (7), which is mechanically closed by using the rod (18),

while turning it around its own axis with the handle (5);

the rod (18), the central part of which is connected to the handle (5), and its upper end with the rounded "7" form hook (22), in order to rotate the hook (22) around its own axis;

the hook (22), which is connected to the rod (18), where during the closing phase of the door (7) this hook (22) is put on the finger (16);

the finger (16), which is firmly connected to the striker (17), and

when the cargo exerts the pressure to the door (7),

the finger (16) is being pushed towards the (y) direction, however it does not move due to the "L" form bend in the surface of the mentioned hook (22);

also this finger (16) is pushed towards the (x) direction, however it does not move due to the striker (17), which is firmly connected to the door (7);

the striker (17), which is firmly connected to the door and which

does not allow the finger (16) to move towards the (x) direction;

which performs not only the function of the lock of the doors (7), but it also protects the doors (7) and the side walls of the container (1) from deformations.

3. The cargo container according to claim 1, **characterized in that** above mentioned side handle (8), which is located near the side of the container and it is distanced minimum 1,5 m (15000 mm) from the surface of the door (7) of the container (1) (this distance to be measured from the surface of the door in the closed position), in order to protect a driver from an accident due to the sudden opening of the door (7), when the handle (8) is pressed down and the lower automatic locking mechanism (X1) is released.
4. The closing method according to claims 1-3, **characterized in that** it comprises the following stages:

- by using a physical force one part of the door (7) (which is typically without a handle) is pushed towards the container (1) until it presses up to the frame of the container;

- by using a physical force and pushing the handle (5) of the rod (18) from himself towards the container (1), the other part of the door (7) is also being pushed towards the frame of the container (1) until it locks up with the lock (2);

- by using a handle (5), which is connected to the rod (18), and turning the rod (18) from himself to the right, the upper improved locking mechanism (3) and the lower standard locking mechanism (4) are being locked up.

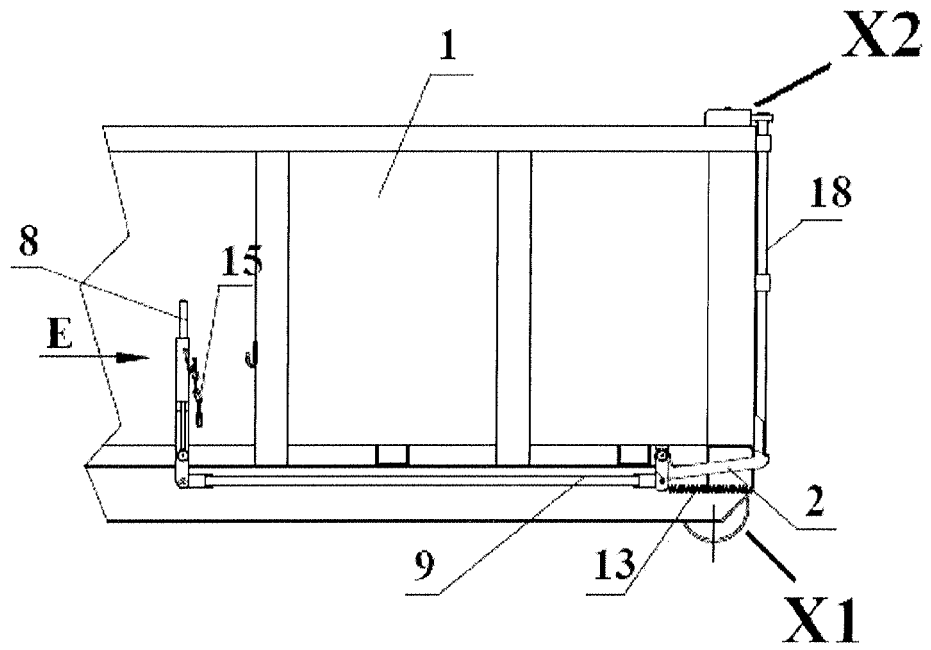


Fig. 1

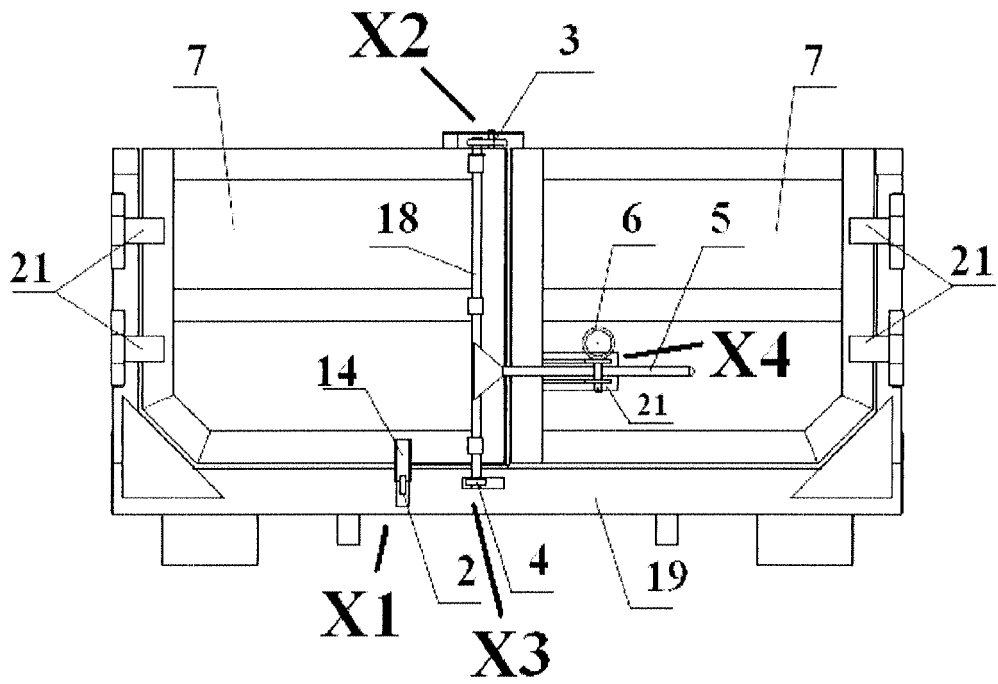


Fig. 2



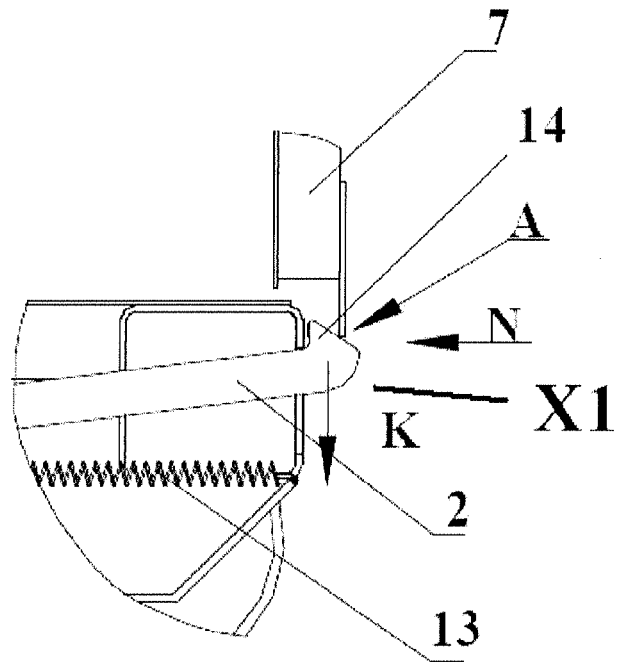


Fig. 4a

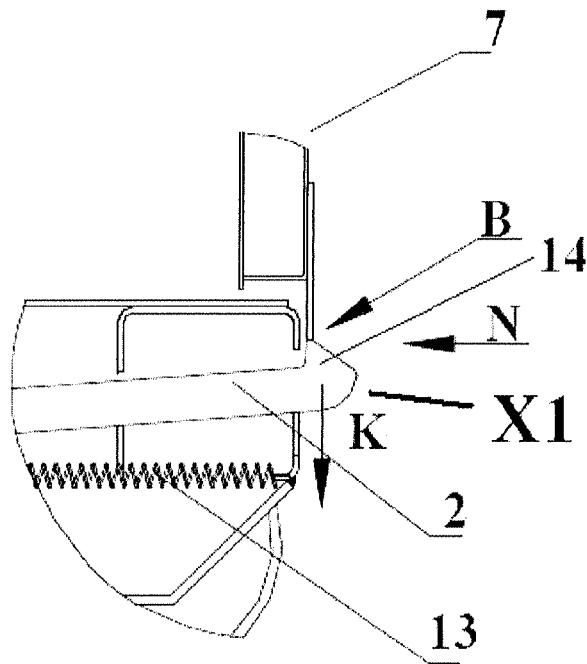


Fig. 4b

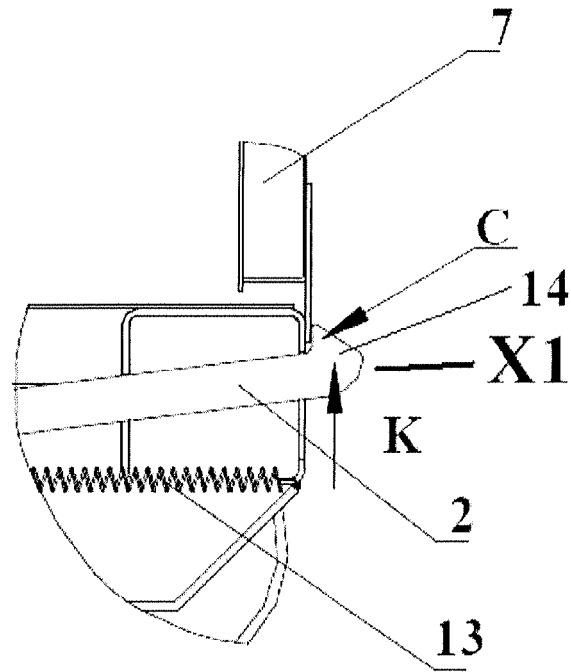


Fig. 4c

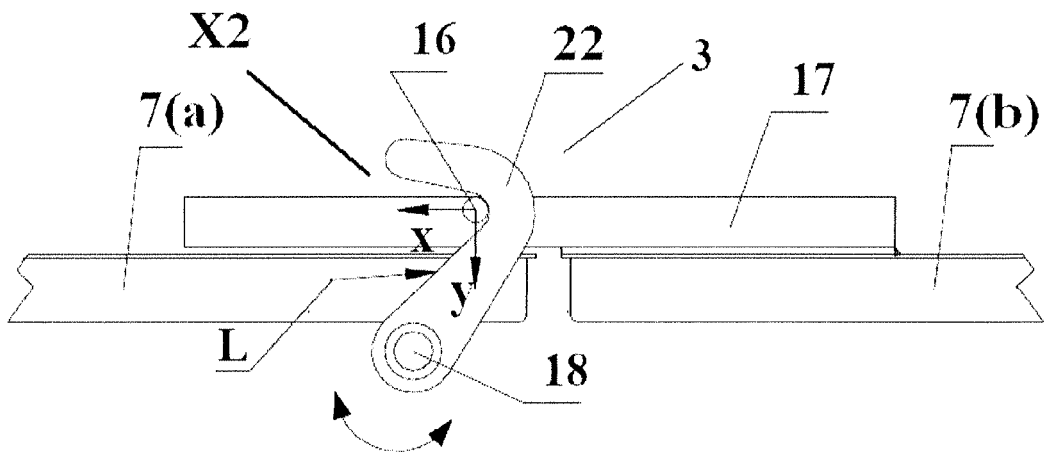


Fig. 5



EUROPEAN SEARCH REPORT

Application Number  
EP 12 18 1617

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