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(54) **Suspension system of a snow plough**

Aufhängungssystem eines Schneepflugs

Système de suspension d'un chasse-neige

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Description

[0001] The object of the invention is a suspension system of a snow plough used particularly for the snow removal from the surface of roads, yards, car parks and other paved surfaces.

[0002] In snow ploughs, in which the working element is constituted by hydraulically controlled mouldboards, swivel-mounted plough blades cause that the plough is resistant to hits against projecting surface irregularities. If bigger irregularities are encountered, the snow ploughs have overload mechanisms which protect the plough against damage.

In the US4821436 patent description, the overload protection is constituted by pins connecting the body with the mouldboard which are destroyed under the influence of the overload and consequently prevent the damage of the snow plough and the cooperating vehicle. U.S. Patent US6594923 shows a plough suspension system in which the hitch is connected with the body by means of one screw element. However, this screw element does not act as overload protection, because in the case of an obstacle, the screw element is not destroyed and does not cause disconnection of the body from the hitch.

[0003] According to a first aspect of the present invention there is provided a suspension system of a snow plough, comprising:

a body and a hitch, a mouldboard with a swivel-mounted plough blade being attachable to the body, a cooperating vehicle being attachable to the hitch,

wherein the hitch is a closed frame with an opening in the middle

wherein the body is connected with the hitch by means of connecting elements, and overload protection mechanism which is constituted by at least a front pressure plate and a rear pressure plate, between which are clamped and stabilizes plate plates of the body and plates of the hitch,

whereas the front pressure plate is connected trough plate of the hitch with rear pressure plate by means of the connecting elements,

wherein the size of the plate of the body is smaller than the opening of the hitch, such that, in an overload thrust towards the vehicle, the connecting elements and overload protection mechanism break and the plate of the body can pass through the opening.

Preferably the connection of the body with the hitch is effected by clamping the front pressure plates with the rear pressure plates by means of connecting elements in the form of a screw and a nut.

[0004] The solution of the snow plough suspension system having an overload protection mechanism fulfilling the function of an overload safety device safeguards the plough elements against damage because in case of an increase of forces acting on a plough blade the connections of elements connecting the body with the hitch are broken as a result of which the remaining structure is protected against damage.

[0005] A snow plough suspension system according to the invention is represented in a drawing in which Fig. 1 shows a suspension system with an overload protection mechanism in an exploded view, Fig. 2 shows a plough suspension system with an overload protection mechanism in a front view, Fig. 3 shows a cross-section according to the A-A line of Fig. 2, and Fig. 4 shows an embodiment of a snow plough with an overload protection mechanism according to the invention.

[0006] A suspension system of a snow plough contains a hitch connected to the body moving torsionally and vertically with respect to the hitch. The system comprising overload protection consists of the body 1 and the hitch 4 connected to each other by means of two front pressure plates 5 and two rear pressure plates 6 connected by means of connecting elements 7, 8. Between pressure plates 5, 6 , there are plates 1A of the body 1 and plates 4A of the hitch 4, whereas front pressure plates 5 are connected trough plate 4A of the hitch 4 with rear pressure plates 6 by means of connecting elements 7,8 and stabilize plate 1A of the body 1 with plates of the hitch 4, forming a closed frame with an opening in the middle.

The size of the plate 1 A of the body 1 is smaller than the opening of the hitch 4, such that, in an overload thrust towards the vehicle, the connecting elements 7,8 and overload protection mechanism break and the plate 1 A of the body 1 can pass through the opening.

The mouldboard 2 with the swivel-mounted plough blade 3 is attached to the body 1.

The connection of the body 1 with the bearing surface of a hitch 4 is effected by clamping the front pressure plates 5 with the rear pressure plates 6 by means of the connecting elements 7 and 8, i.e. a screw and a nut. The front pressure plates 5 and the rear pressure plates 6 stabilize a plate 1A of the body 1 with plates 4A of the hitch 4.

The snow plough suspension system features turning (right-left) and vertical (up-down) tracing.

If during the operation a big longitudinal force acting on the plough blade occurs, the body 1 transfers the load to the front pressure plate 5 or the rear pressure plate 6, depending on the working direction of the plough. Then the connecting elements 7, 8 and the overload protection are broken, and the plough blade 3 with the body 1 is detached from the hitch 4. It prevents damage to the plough and the vehicle to which it is attached.

Claims

1. A suspension system of a snow plough, the system

comprising a body (1) and a hitch (4), a mouldboard (2) with a swivel-mounted plough blade being attachable to the body (1), a cooperating vehicle being attachable to the hitch (4),
wherein the hitch is a closed frame with an opening in the middle
wherein the body (1) is connected with the hitch (4) by means of connecting elements (7, 8), and overload protection mechanism which is constituted by at least a front pressure plate (5) and a rear pressure plate (6), between which are clamped and stabilized a plate (1A) of the body (1) and plates (4A) of the hitch (4),
whereas the front pressure plate (5) is connected trough plate (4A) of the hitch (4) with rear pressure plate (6) by means of the connecting elements (7, 8), wherein the size of the plate (1A) of the body (1) is smaller than the opening of the hitch (4), such that, in an overload thrust towards the vehicle, the connecting elements (7, 8) and overload protection mechanism break and the plate (1A) of the body (1) can pass through the opening.

2. A suspension system of a snow plough as in claim 1 **characterized in that** the connection of the body (1) with the hitch (4) is effected by clamping the front pressure plates (5) with the rear pressure plates (6) by means of the connecting elements (7) and (8) in the form of a screw and a nut.

Patentansprüche

1. Das Aufhängungssystem des Schneepfluges ist ein System, das aus einem Körper (1) und einer Anhängevorrichtung (4), einem Streichblech (2) mit einer schwenkbar gelagerten Pflugschar, die an dem Körper anzubringen ist (1), und einem mit der Anhängevorrichtung zu verbindenden Fahrzeug (4), besteht,
wobei die Anhängevorrichtung ein Rahmen mit einer Öffnung in der Mitte ist,
wo der Körper (1) mit der Anhängevorrichtung (4) durch Verbindungelemente verbunden ist (7,8), und ein Überlast-Schutzmechanismus, der zumindest aus einer Druckplatte (5) und einer hinteren Druckplatte besteht (6), zwischen denen er eingeklemmt und stabilisiert ist und einer Platte (1A) des Körpers (1) und Platten (4A) der Aufhängevorrichtung (4),
während die vordere Druckplatte (5) durch die Platte (4A) der Aufhängervorrichtung (4) mit der hinteren Platte (6) durch Verbindungselemente (7,8) verbunden ist,
wobei die Platte (1A) des Körpers (1) kleiner als die Öffnung der Aufhängevorrichtung ist (4), so wenn die Überlast gegen das Fahrzeug stößt, brechen die Verbindungelemente (7,8) und der Überlast-Schutzmechanismus und die Platte (1A) des Körpers (1) kann über die Öffnung durchlaufen.

2. Das Aufhängungssystem des Schneepfluges, nach Anspruch 1, **dadurch gekennzeichnet, dass** die Verbindung des Körpers (1) mit der Aufhängevorrichtung (4) durch das Einklemmen der vorderen Druckplatten (5) mit den hinteren Druckplatten (6) durch Verbindungelemente (7) und (8) mithilfe einer Schraube und einer Mutter bewirkt wird.

Revendications

1. Le système de suspension d'un chasse-neige comprend un corps (1) et un attelage (4), un versoir (2) avec lame à neige pivotante étant attachée au corps (1), et le véhicule coopérant étant attaché à l'attelage (4),
où l'attelage est un cadre fermé avec une ouverture au milieu
où le corps (1) est relié avec l'attelage (4) par des éléments de raccordement (7,8), et la protection contre les surcharges qui est composée au moins d'une plaque de pression (5) et d'une plaque arrière de pression (6), entre lesquelles sont attachées et stabilisées la plaque (1A) du corps (1) et les plaques (4A) de l'attelage (4),
tandis que la plaque frontale de pression (5) est reliée à travers la plaque (4A) de l'attelage (4) à la plaque arrière de pression (6) par des éléments de raccordement (7,8),
où la taille de la plaque (1A) du corps (1) est plus petite que l'ouverture de l'attelage (4), de façon que, en cas d'une surcharge du véhicule, les éléments de raccordement (7,8) et la protection contre les surcharges se cassent et la plaque (1A) du corps (1) peut passer par l'ouverture.

2. Le système de suspension d'un chasse-neige comme dans sinistres 1 **caractérisé en ce que** la connexion du corps (1) à l'attelage (4) est affecté par l'attachement des plaques pression (5) aux plaques arrières de pression (6) par des de raccordement (7) et (8) sous forme d'une vis et d'un

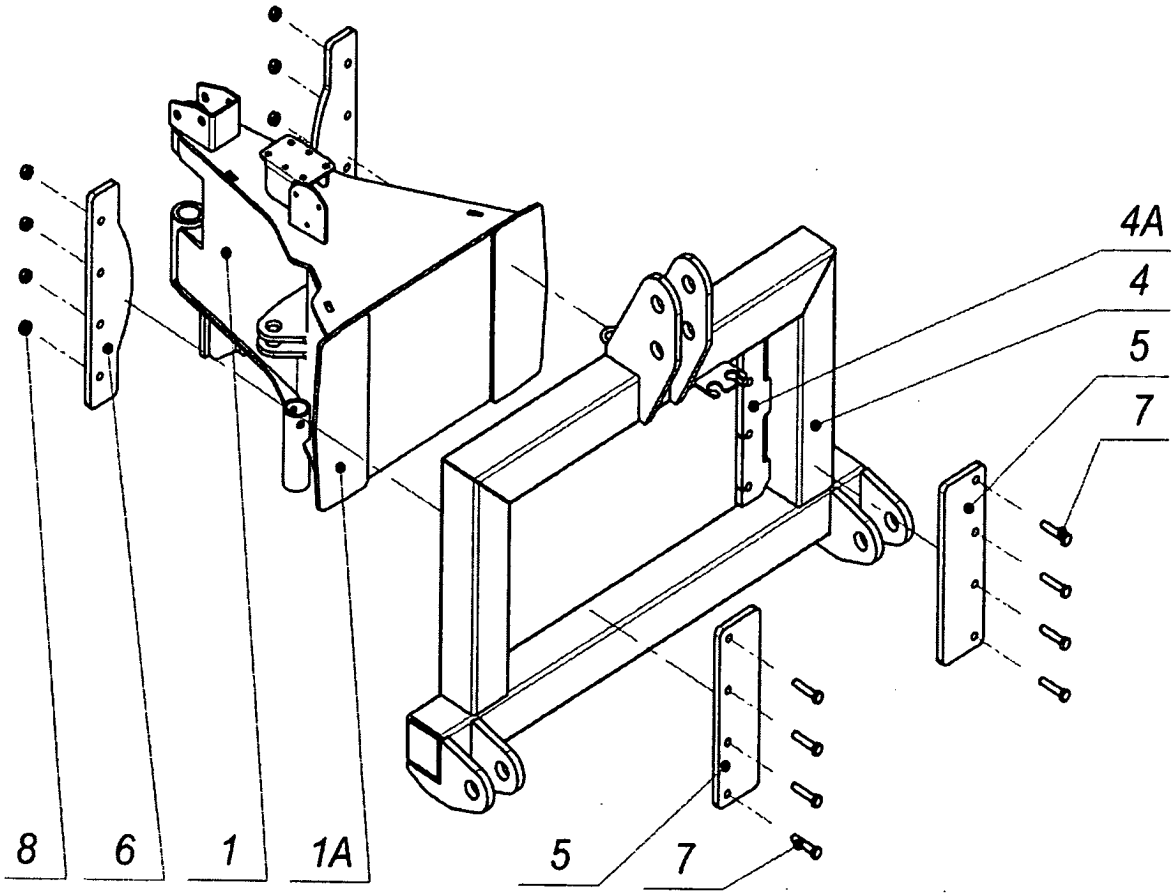


Fig. 1

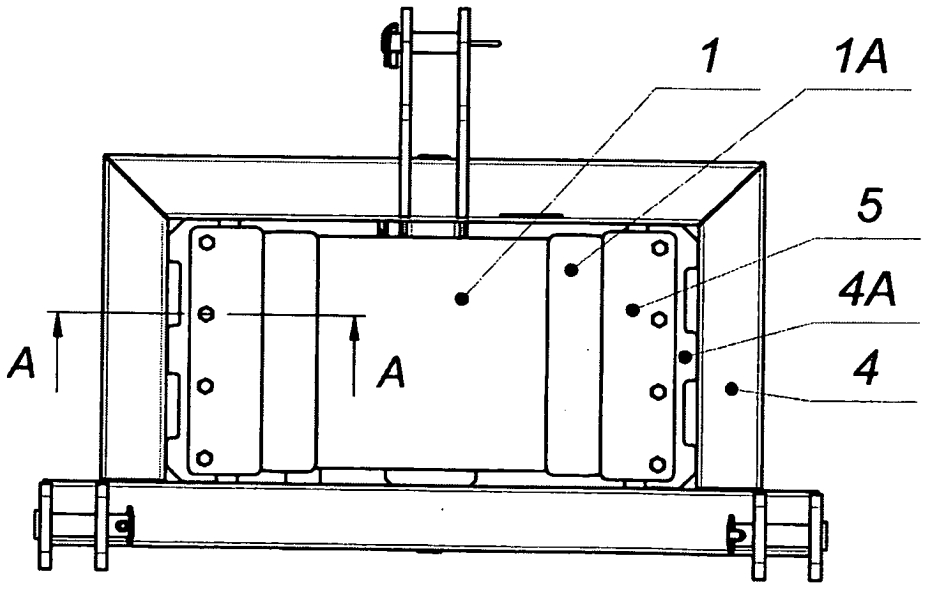


Fig. 2

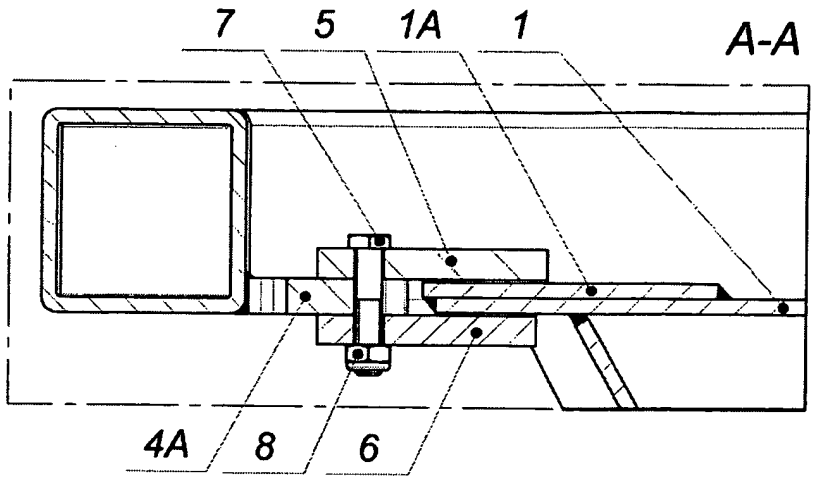


Fig. 3

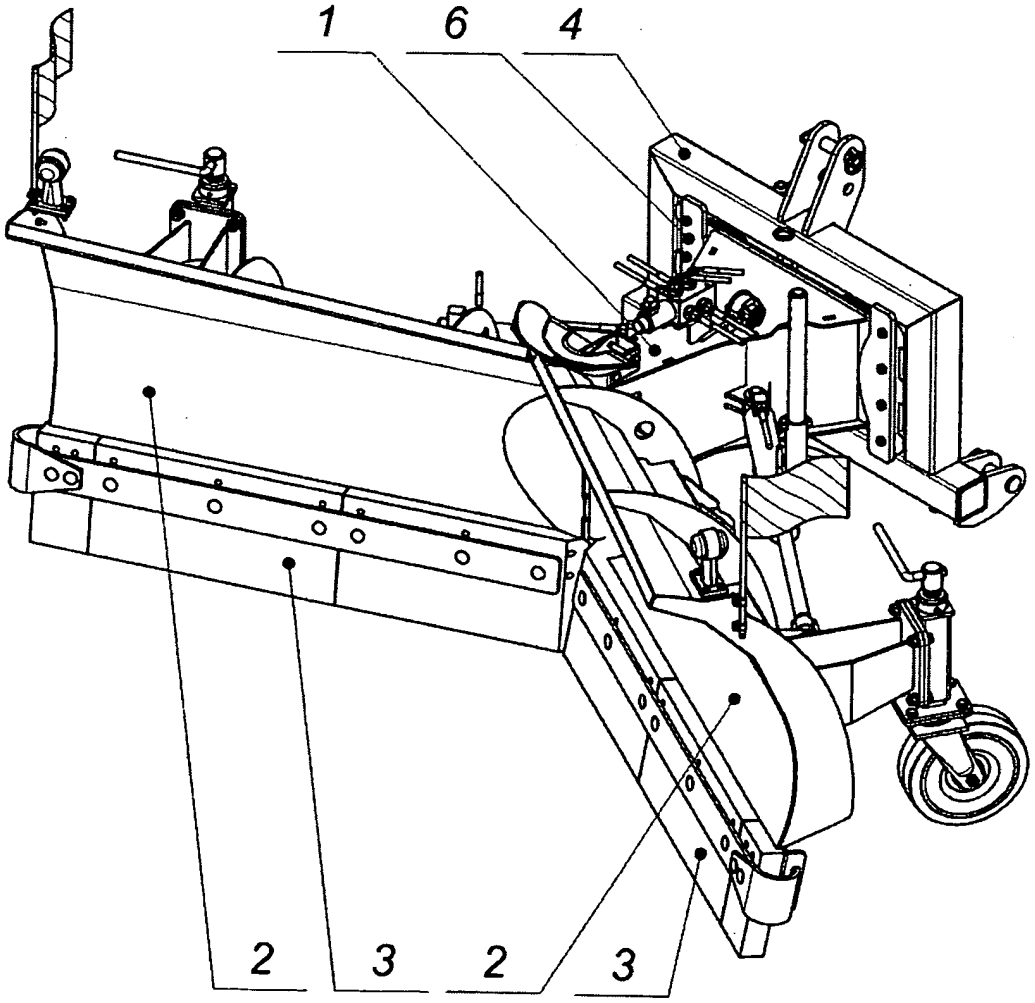


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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