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TRANSPORT DEVICE FOR ROUND BALES

FIELD OF THE INVENTION

The invention relates to a transport device for round bales for coupling with a preferably
5 agricultural utility vehicle, according to the preamble of claim 1.

PRIOR ART

In agricultural practice the feed bales, for example, are wrapped air-tight for ensiling with
10 wrapping films. This wrapping is carried out with their own devices usually already on the field. The silage bales wrapped with films have diameters of more than a metre, and are transported with their own transport forks. The silage bales can thereby be designed with a rotary cylinder shape as so-called round bales, or cuboid-shaped as so-called square bales.

15 In particular, for the transport of round bales their own transport forks are provided, which can be mounted detachably on an agricultural utility vehicle. By means of the transport forks as a rule only one, two or four silage bales can be transported at the same time.

20 A disadvantage of the prior art manifests itself in that such transport forks provided for the transport of round bales are not permissible for the transport on public roads, in particular with regard to load safety, without additional securing devices. Similarly, only a limited amount of round bales can be transported at the same time by means of transport
25 forks. For the transport of larger amounts of round bales it is only known to stack these on a load area of a utility vehicle or a trailer and fasten them with the aid of lashing straps, which involves a great amount of work.

A transport device of the type in question was described in US 3,942,666. Further
30 transport devices were described in US 4,249,842, US 4,182,590, EP 0 391 804, US 4,050,598 and US 4,938,646.

OBJECT OF THE INVENTION

One object of the invention is, therefore, to propose a transport device for round bales, by means of which round bales can be transported on public roads. A further object can
5 be seen in making possible a simple loading or unloading of the transport device.

PRESENTATION OF THE INVENTION

These objects are achieved with a transport device according to the present invention for
10 round bales according to claim 1. Claim 1 relates to a transport device for round bales, comprising a conveying unit extending in a longitudinal direction, forming a storage surface for the round bales, preferably a continuous conveyor or a roller track, having a cage-like superstructure for receiving a plurality of round bales and a connection element for coupling the transport device with a preferably agricultural utility vehicle, wherein the
15 transport device has a delivery unit, that is able to be swivelled, disposed at one end of the storage surface, by means of which delivery unit a round bale can be delivered onto the storage surface, and wherein a round bale located on the storage surface can be conveyed by means of the conveying unit in the direction of the end of the storage surface located opposite the delivery unit, wherein the delivery unit has an L-shaped swivel arm,
20 which swivel arm can be swivelled about a first swivel axis, extending parallel to the storage surface and normal to the longitudinal direction, from a gripping position for gripping under a round bale into a delivery position for the delivery of the round bale, gripped from below, onto the storage surface, wherein a first leg of the L-shaped swivel arm is aligned parallel to the first swivel axis. According to the present invention it is
25 proposed in this connection, that the swivel arm can be swivelled out about a second swivel axis aligned normal to the first swivel axis from an uptake position in which the swivel arm can be swivelled out laterally to the conveying surface into the gripping position.

30 In the transport of round bales and in particular in the loading and unloading of the transport device it is first of all crucial that the wrapping film is not damaged, in order to ensure the ensiling of the feed bale or the tightness. In order to be able to place the round bales on the storage surface, a delivery unit, which can be swivelled, is therefore provided

on an end of the storage surface, by means of which round bales resting on a surface can be delivered onto the storage surface. Since the transport device usually comprises at least one set of wheels for the road transport, the storage surface as a rule is spaced apart from the surface in the vertical direction.

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According to claim 1 it is proposed in this connection, that the delivery unit has an L-shaped swivel arm, which swivel arm can be swivelled about a first swivel axis, extending parallel to the storage surface and normal to the longitudinal direction, from a gripping position for gripping under a round bale into a delivery position for the delivery of the round bale, gripped from below, onto the storage surface, wherein a first leg of the L-shaped swivel arm is aligned parallel to the first swivel axis. The swivel arm which can be swivelled about the first swivel axis represents a particularly simple technical implementation of the delivery unit. A first leg of the L-shaped swivel arm, preferably a crossbar, is thereby aligned parallel to the first swivel axis and is provided for the contact with the round bales. During the movement from the gripping position, in which the first leg of the swivel arm contacts a section facing away from the transport device of the lateral surface of a round bale arranged on the surface, into the delivery position the swivel arm lifts the round bale, gripped from below, onto the storage surface. As soon as the swivel arm in the delivery position encloses a defined angle with the storage surface, of about 80° to 100°, in particular of 85° to 95°, the round bale detaches from the swivel arm and rolls onto the storage surface. At the latest when the swivel arm has reached the delivery position, the delivered round bale can be conveyed via the conveying unit in the direction of the opposite end of the storage surface.

Since the round bales to be received as a rule have a diameter of more than a metre, however, the distance between a pivotal point of the round bale on the delivery unit and the first leg of the swivel arm must be smaller than the diameter of the round bale, a movement of the swivel arm from the delivery position into the gripping position is not readily possible, if a round bale to be received is already positioned accordingly in front of the delivery unit, since said delivery unit would block the swivel movement. At the same time a round bail with additional aids would have to be rolled via a swivel arm swivelled into the gripping position, if the positioning of the round bale relative to the delivery unit occurs only after swivelling the swivel arm into the gripping position. According to the

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present invention it is therefore provided, that the swivel arm can be swivelled out about a second swivel axis aligned normal to the first swivel axis from an uptake position in which the swivel arm can be swivelled out laterally to the conveying surface into the gripping position. As a result of the lateral swivelling out of the swivel arm about the second swivel axis, which as a rule during the swivelling of the swivel arm from the uptake position into the gripping position assumes an angle of between 90° and 120° to the storage surface, preferably is aligned approximately perpendicular to the storage surface, in a simple manner the transport device can initially be positioned relative to the round bale such that the round bale is in the uptake position in front of the delivery unit. After the positioning the swivel arm is swivelled from the uptake position into the gripping position, without the round bale thereby having to be moved. It is thereby conceivable that the swivel arm can be swivelled from the gripping position into the uptake position and/or can be swivelled from the delivery position into the uptake position.

The transport device according to the present invention thus undergoes an uptake movement for round bales, in which a single L-shaped swivel arm suffices and no forks, prongs arranged in pairs or the like are required. The L-shaped swivel arm can as a result also be swivelled before receiving a round bale about a perpendicular swivel axis and be brought into a gripping position, in which the first leg grips under the round bale. Subsequently the L-shaped swivel arm swivels about a first swivel axis extending parallel to the storage surface and normal to the longitudinal direction, from a gripping position for gripping under the round bale into a delivery position for the delivery of the round bale, gripped from below, onto the storage surface. As a result of the design of the delivery unit according to the present invention the round bale can roll onto the storage surface, and space-consuming movements of the round bale can be avoided. The reception of the round bales can thus take place more rapidly and in a more energy-efficient manner.

In addition, by means of the transport device according to the present invention it is possible to receive the round bales widthwise in the direction of travel of the round baler. The round baler drops the round bales namely transversely to their direction of travel, therefore, with a roll axis perpendicular to the direction of travel. In the case of conventional designs the round bale must be always be approached parallel to the roll

axis and in the longitudinal direction of the transport device, therefore, transversely to the direction of travel of the round baler. In the case of the transport device according to the present invention the round bales can, however, be approached perpendicular to the roll axis, therefore, in the direction of travel of the round baler, which greatly facilitates the uptake process.

In order to be able to transport round bales on public roads, without having to provide further securing devices, the transport device in addition has a storage surface, on which the round bales rest during the transport. The storage surface is surrounded by a cage-like superstructure at least in the lateral direction and preferably also in the vertical direction, wherein the superstructure prevents the round bales from falling down during the transport. The cage-like superstructure can, for example, comprise two side walls preferably formed by a series of vertical supports for the lateral delimitation of the storage surface. Preferably, the cage-like superstructure also comprises a plurality of cross-members, which connect the two side walls with one another and delimit the transport device in the vertical direction, in order to prevent the round bales from rolling out in the event the transport device falls over.

So that a larger number of round bales, therefore, for example, three, four, five, six or more round bales, can be delivered by means of the delivery unit onto the storage surface and can be transported on the storage surface without damaging the wrapping films, the storage surface is formed by a conveying unit, by means of which the round bales delivered onto the storage surface can be conveyed in the direction of the end of the storage surface opposite the delivery unit. The conveying unit can, for example, be drivable via an electric drive and, for example, can be designed as a continuous conveyor, for example, as a belt conveyor, so that a round bale can be conveyed after the delivery onto the storage surface by activation of the drive. The storage surface is in this case formed by a continuous conveyor means forming the conveyor surface of the continuous conveyor, therefore, for example, a belt.

In order to prevent the round bales from falling down at the end of the storage surface opposite the delivery unit, a round bale barrier, for example, a barrier-like blocking unit or a door-like blocking element can be disposed at this end.

To protect the wrapping film of the round bales during the transport on the transport device or during the conveyance of the round bales from the delivery unit to the opposite end of the storage surface it is provided in an embodiment variant of the invention, that

5 guide rollers are arranged on the side walls of the cage-like superstructure aligned perpendicular to the storage surface. By means of the guide rollers the round bales can easily roll off during their conveyance.

A further embodiment variation of the invention provides that the connection element is

10 connected to the transport device so as to be swivellable about a connection axis aligned normal to the storage surface. By means of the connection element the transport device can be coupled with a utility vehicle, for example, a tractor, wherein the utility vehicle, can be used, for example, as a towing vehicle for the transport device. Due to the swivellable connection about the connection axis, the transport device can be swivelled

15 relative to the utility vehicle, for example, via a hydraulic cylinder. Thus, for example, the delivery unit can be aligned with a round bale lying on the surface by swivelling the transport device about the connection axis.

In order to be able to support the round bales on the transport device during the delivery

20 procedure, without thereby damaging the wrapping film, according to a further preferred embodiment variant of the invention it is provided that the delivery unit has a roller aligned parallel to the first swivel axis for rolling off the round bales during the delivery procedure. The round bale thereby contacts the roller as well as the swivel arm at least during a part of the delivery procedure, so that the round bale during the swivelling of the

25 swivel arm about the first swivel axis rolls off on the roller from the gripping position into the delivery position. In other words, between the roller and the crossbar of the swivel arm a receiving opening is formed for the round bales, wherein the clear width between the roller and the first leg of the swivel arm is smaller than the diameter of the round bale to be delivered.

30 A further preferred embodiment variant of the invention provides that the swivel arm comprises at least two telescopic elements, which can be slid telescopically into one another. Thus, the swivel arm can be adapted individually to the size of the round bale to

be received, in that the telescopic elements are either slid into one another in order to reduce the clear width of the delivery unit, or are slid apart from one another in order to enlarge the clear width of the delivery unit. As a rule the telescopic elements are fixed relative to each other by fixing means such as bolts or pins. Theoretically it is also conceivable to shift the telescopic elements against each other by means of a motor. Preferably, the second leg of the L-shaped swivel arm is formed by the telescopic elements, so that the distance between the first leg and the first swivel axis can be adjusted by means of the telescopic elements.

10 In order to block the storage surface in the longitudinal direction and to prevent the round bales from being able to fall from the transport device during the transport via the end of the storage surface having the delivery unit, it is provided in a further preferred embodiment variant of the invention, that the swivel arm in the delivery position forms a round bale barrier. If the swivel arm in the delivery position forms the round bale barrier, 15 the first leg of the swivel arm closes the opening in the cage-like superstructure necessary for the delivery unit in a barrier-like manner.

In a further preferred embodiment variant of the invention it is provided that the delivery unit has at least one hydraulic cylinder per swivel axis, in order to swivel the swivel arm about the first and/or second swivel axis. By means of the hydraulic cylinder the swivelling 20 of the swivel arm can be solved technically in a simple manner. In principle electric motors or transmissions are also conceivable.

It is particularly advantageous if the transport device has a further delivery unit, by means of which the transport device can be loaded and unloaded alternatively to the delivery unit. The further delivery unit is thereby preferably designed analogously to the delivery unit. Therefore, in a further embodiment variant of the invention it is provided that a further delivery unit is disposed at the end of the storage surface opposite the delivery unit. Thus, on the one hand, the unloading can be carried out in a simple manner at the 25 end of the storage surface opposite the delivery unit by means of the further delivery unit. Similarly, round bales can also be delivered onto the storage surface via the further delivery unit in the previously described manner. It is thereby advantageous if the round 30

bales can also be conveyed by means of the conveying unit in the opposite direction, therefore, in the direction of the delivery unit.

SHORT DESCRIPTION OF THE FIGURES

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The invention is now elucidated in detail by means of an embodiment. The drawings are exemplary and are supposed to explain the idea of the invention, but in no way to restrict it or even render it conclusively.

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Fig. 1 shows a side view of a transport device according to the present invention;

Fig. 2 shows a top view of the transport device;

Fig. 3 shows a front view of the transport device;

Fig. 4 shows a three-dimensional view of the transport device;

Fig. 5 shows a three-dimensional detailed view of a delivery unit of the transport device.

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WAYS TO IMPLEMENT THE INVENTION

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Figs. 1 to 3 show a transport device 1 according to the present invention for the reception and the transport of round bales in the agricultural area in three different views. The transport device 1 has a chassis-frame 3, which is formed by a metal rod assembly. In the chassis-frame 3 a conveying unit 6 is installed, which is designed as a continuous conveyor, more precisely as a belt conveyor and has a storage surface 7, on which the round bales can be stored. The storage surface 7 is surrounded in the lateral direction and in the vertical direction by a cage-like superstructure 2, which, on the one hand, delimits an uptake volume for the round bales, and, on the other hand, ensures the load safety, in order to prevent the round bales from being inadvertently able to fall out of the transport device 1 during the transport.

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The cage-like superstructure 2 thereby comprises in the present embodiment two side walls 4, which in each case laterally delimit the storage surface 7 (see Fig. 2) and a plurality of cross-members 5, which connect the two side walls 4 and delimit the uptake volume upwardly. For the sake of clarity only two of the seven cross-members 5 in Fig. 2 are provided with a reference sign.

At the end of the storage surface 7 a delivery unit 10 is disposed, by means of which as described below round bales can be delivered onto the storage surface 7. At the same end of the storage surface 7 the transport device 1 has a connection element 9 for coupling the transport device 1 with a utility vehicle, for example, a tractor. On the end of the storage surface 7 opposite the delivery unit 10 the transport unit 1 has a further delivery unit 10', which is similar in structure to the delivery unit 10. As a result, only the functioning of the delivery unit 10 is therefore elucidated in detail.

10 The conveying unit 6 extends in a longitudinal direction 8 of the transport device 1 and serves to convey round bales delivered by means of the delivery unit 10 onto the storage surface 7 from the end of the storage surface 7 having the delivery unit 10 in the direction of the end of the storage surface 7 opposite the delivery unit 10, therefore, in other words, in the longitudinal direction 8. Thus, on the one hand, a larger number of round bales can be received in a simple manner by the transport device 1, on the other hand, the danger of damaging the wrapping film of the round bales can be reduced by the gentle transport by means of the conveying unit 6. Also, the conveyance in the opposite direction, therefore, in the direction of the delivery unit 10 is possible. Additionally, the entire storage surface 7 can theoretically be supplied with a single delivery unit 10 disposed at the end side.

The side walls 4 of the cage-like superstructure 2 consist in the present embodiment of vertical supports, vertical struts and transverse struts. On the vertical struts guide rollers 19 are mounted, for the sake of clarity in each case only two thereof are provided with reference signs, the longitudinal axis of which are aligned normal to the storage surface 6, in order to protect the round bales conveyed or stored in the transport device 1 against a damaging of the wrapping film and to support the round bales in the lateral direction during the conveyance or the storage. On the underside of the chassis-frame 3 in the present embodiment two sets of wheels 21 are mounted, so that the transport device 1 can be transported, for example, as a trailer of a towing vehicle coupled via the connection element 9.

Fig. 4 shows a three-dimensional representation of the transport device 1 in which, as also in Figs. 2 and 3, a continuous conveyor means, in the present case a belt, of the conveying unit 6 is not depicted. Therefore, the storage surface 7 per se cannot be seen, however, on the one hand, the chassis-frame 3 lying underneath the continuous conveyor means and, on the other hand, the drive rollers 22 of the conveying unit 6, between which the continuous conveyor means is stretched, is thereby visible. However, it is self-evident that the storage surface 7 is formed by a common tangential plane of the two drive rollers 22, which runs just above the chassis-frame 3.

It can also be clearly seen in Fig. 4, that the connection element 9, which can be swivelled about the connection axis 20 on the transport device 1, in the present case, is connected to the cage-like superstructure 2, more precisely to one of the side walls 4, wherein a second position of the swivelled connection element 9 is represented with dashes. The connection axis 20 is aligned normal to the storage surface 7 or runs parallel to a vertical direction of the transport device 1. Due to the lateral connection of the connection element 9 to the cage-like superstructure 2 the transport device 1 can be swivelled in a simple manner about the connection axis 20 relative to a utility vehicle, so that the delivery unit 10 can be positioned relative to a round bale located on the surface, in order to deliver the round bale to the storage surface 7. In order to assist this swivel movement about the connection axis 20, a hydraulic cylinder 15 (see Figs. 1 and 5) is disposed between the cage-like superstructure 2 and the connection element 9.

In particular, by means of Fig. 5, which shows a detailed depiction of the delivery unit 10 from Fig. 3 and by means of the preceding figures the functioning of the delivery unit 10 or of the analogously constructed further delivery unit 10' are supposed to be elucidated. The delivery unit 10 comprises an L-shaped swivel arm 11, which is connected swivellably about a first swivel axis 12 to the transport device 1. The first swivel axis 12 thereby runs parallel to the storage surface 7 and normal to the longitudinal direction 8. The L-shaped swivel arm 11 has a first leg, which is aligned parallel to the first swivel axis 12, and a second leg, which connects the first leg to the first swivel axis 12. As can be seen in particular in Fig. 3, the first leg of the swivel arm 11 is designed as crossbar 18 with a circular-cylindrical shape. The second leg is formed by a first telescopic element 16 and a second telescopic element 17, which have a rectangular cross section and are designed

so as to be able to be slid into one another or to be able to be slid apart from one another. The two telescopic elements 16, 17 can be fixed relative to one another in a plurality of positions, for example, by means of bolts or pins. Due to the telescopic design of the second leg the distance of the crossbar 18 from the first swivel axis 12 can be varied.

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About the first swivel axis 12 the swivel arm can be swivelled from a delivery position A, which is depicted in all figures as a solid line, into a gripping position B, which is depicted as a dashed line, or vice versa. This swivel movement is carried out in particular during the delivery of a round bale onto the storage surface 7. A round bale is thereby arranged in the delivery unit 10, wherein the swivel arm 11 is located in the gripping position B and the crossbar 18 contacts the section of the lateral surface of the round bale facing away from the storage surface 7. While the swivel arm 11 is moved into the delivery position A, the round bale is supported on a roller 14 of the delivery unit 10, which is aligned parallel to the first swivel axis 12, and on which the round bale can roll off. From the roller 14 the round bale reaches the storage surface 7, at the latest in the delivery position A, in which the second leg of the swivel arm 11 encloses a right angle with the storage surface 7, and can be conveyed by means of the conveying unit 6 in the longitudinal direction 8.

Since the crossbar 18 of the swivel arm 11 must grip under the round bale in the gripping position B, in order to be able to lift it, a movement from the delivery position A into the gripping position B is not possible in the present embodiment, if a round bale is already positioned in front of the delivery unit 10, since the swivel movement is blocked by the round bale. Therefore, the swivel arm 11 can be pivoted about a second swivel axis 13, which is normal to the first swivel axis 12, in order to swivel the swivel arm 11 from the uptake position C (also drawn with dashed lines) into the gripping position B.

In the uptake position C the swivel arm 11 is swivelled out laterally to the storage surface 7, wherein in the depicted figures both legs of the swivel arm 11 are aligned parallel to the conveying surface 7, and the second leg is in addition aligned parallel to the first swivel axis 12. Thus, the transport device 1 can be positioned in a simple manner relative to the round bale, if the swivel arm 11 is located in the uptake position C. From the uptake position C the swivel arm 11 can be swivelled into the gripping position B without being blocked by the round bale. The second swivel axis 13 in the depicted embodiment is

aligned normal to the storage surface 7 in the uptake position C and the gripping position B, while in the delivery position A of the swivel arm 11, after swivelling about the first swivel axis 12, it is aligned parallel to the storage surface 7. The swivelling about the swivel axes 12, 13 thereby takes place via hydraulic cylinder 15 (see Fig. 1 and Fig. 3).

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For the reception of a round bale in the transport device 1 in the present embodiment the procedure is as follow: The swivel arm is swivelled from the delivery position A into the gripping position B and from the gripping position B into the uptake position C. Then a round bale is positioned in the delivery unit 10, or the transport device 1 is aligned relative to a round bale, so that the round bale is arranged in front of the delivery unit 10. Subsequently, the swivel arm 11 is swivelled from the uptake position C into the gripping position B, in which the crossbar 18 grips under the round bale and swivels from the gripping position B with the round bale into the delivery position A.

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The further delivery unit 10', as already previously mentioned, is designed analogously to the above-described delivery unit 10 and therefore has a further swivel arm 11' and a further roller 14', which work together according to the same principle, as was described in the case of the delivery unit 10.

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In order to prevent the round bales from falling down from the storage surface 7 in the longitudinal direction 8 during the transport, the swivel arm 11 of the delivery unit 10 or the further swivel arm 11' of the further delivery unit 10' in the respective delivery position A forms a round bale barrier. The crossbar 18 thereby blocks the opening formed in the cage-like superstructure 2 for receiving the round bales in a barrier-like manner.

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It is self-evident, that the conveying unit 6 does not have to be drivable by means of a drive unit as in the embodiment shown, but rather can also be designed without a drive. Thus, it is conceivable in an alternative embodiment variant that the conveying unit 6 is designed as a roller conveyor with a plurality of conveyor rollers spaced apart from one another in the longitudinal direction 8, the longitudinal axes of which are aligned normal to the longitudinal direction 8. The angular positions of the delivery position A, the gripping position B and the uptake position C are thereby to be understood exemplarily, since a person skilled in the art is able to derive a plurality of possible angular positions

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from the arrangement of the swivel axes 12, 13, by means of which the delivery of a round bale onto the storage surface is possible.

LIST OF REFERENCE SIGNS

	1	transport device
	2	cage-like superstructure
	3	chassis-frame
5	4	side wall of the superstructure 2
	5	cross-member of the superstructure 2
	6	conveying unit
	7	storage surface
	8	longitudinal direction
10	9	connection element
	10	delivery unit
	10'	further delivery unit
	11	swivel arm
	11'	further swivel arm
15	12	first swivel axis
	13	second swivel axis
	14	roller
	14'	further roller
	15	hydraulic cylinder
20	16	first telescopic element
	17	second telescopic element
	18	crossbar
	19	guide roller
	20	connection axis
25	21	set of wheels
	22	drive roller
	A	delivery position
	B	gripping position
	C	uptake position

Patentkrav

1. Transportindretning (1) til rundballe, omfattende fremføringsenhed (6) som strækker sig i en længderetning (8), dannende en lejeblade (7) til rundballerne, 5 fortrinsvis et roterende transportbånd- eller en rullebane, med en bur-lignende overbygning (2) til at modtage en flerhed af rundballe og et forbindelseselement (9) til sammenkobling af transportindretningen (1) med et, fortrinsvis landbrugsmæssigt, køretøj, idet transportindretningen (1) har en drejelig tilførselsenhed (10) anbragt ved en ende af lejebladen (7), ved hjælp af hvilken 10 tilførselsenhed (10) en rundballe kan tilføres lejebladen (7), og idet en rundballe, som befinder sig på lejebladen (7), ved hjælp af fremføringsenheden (6) kan transporteres i retningen af enden af lejebladen (7) anbragt modsat tilførselsenheden (10), idet tilførselsenheden (10) har en L-formet drejearm (11), hvilken drejearm (11) kan drejes om en første drejeakse (12), som strækker sig 15 parallelt med lejebladen (7) og vinkelret på længderetningen (8), fra en gribe-position (B) til at gribe under en rundballe i en tilførselsposition (A) til tilførsel af rundballen, grebet nedefra, til lejebladen (7), idet et første ben af den L-formede drejearm er indrettet parallelt med den første drejeakse, **kendetegnet ved, at** drejearmen (11) kan drejes ud om en anden drejeakse (13) indrettet 20 vinkelret på den første drejeakse (12) fra modtagepositionen (C), i hvilken drejearmen (11) kan drejes ud til siden til lejebladen (7), i gribe-positionen (B).
2. Transportindretning (1) ifølge krav 1, **kendetegnet ved, at** ved sidevæggene (4) af den bur-lignende overbygning (2) er styreruller (19) anbragt og indrettet 25 vinkelret på lejebladen (7).
3. Transportindretning (1) ifølge krav 1 eller 2, **kendetegnet ved, at** forbindelseselementet (9) er forbundet med transportindretningen (1) på en drejende måde omkring en forbindelsesakse (20) indrettet vinkelret på lejebladen 30 (7).
4. Transportindretning (1) ifølge et af kravene 1 til 3, **kendetegnet ved, at** tilførselsenheden (10) har en rulle (14) anbragt parallelt med den første drejeakse

(12) til at afrulle rundballen under tilførselsprocessen.

5. Transportindretning (1) ifølge et af kravene 1 til 4, **kendetegnet ved, at** drejearmen (11) omfatter mindst to teleskopisk sammenskydelige

5 teleskopelementer (16,17).

6. Transportindretning (1) ifølge et af kravene 1 til 5, **kendetegnet ved, at** drejearmen (11) i tilførselspositionen danner en rundballespærre.

10 **7.** Transportindretning (1) ifølge et af kravene 1 til 6, **kendetegnet ved, at** tilførselsenheden (10) har mindst en hydraulikcylinder (15) per drejeakse (12,13), til at dreje drejearmen (11) omkring den første (12) og/eller anden drejeakse (13).

15 **8.** Transportindretning (1) ifølge et af kravene 1 til 7, **kendetegnet ved, at** en yderligere tilførselsenhed (10') er anbragt ved enden af lejefladen (7) modsat tilførselsenheden (10).

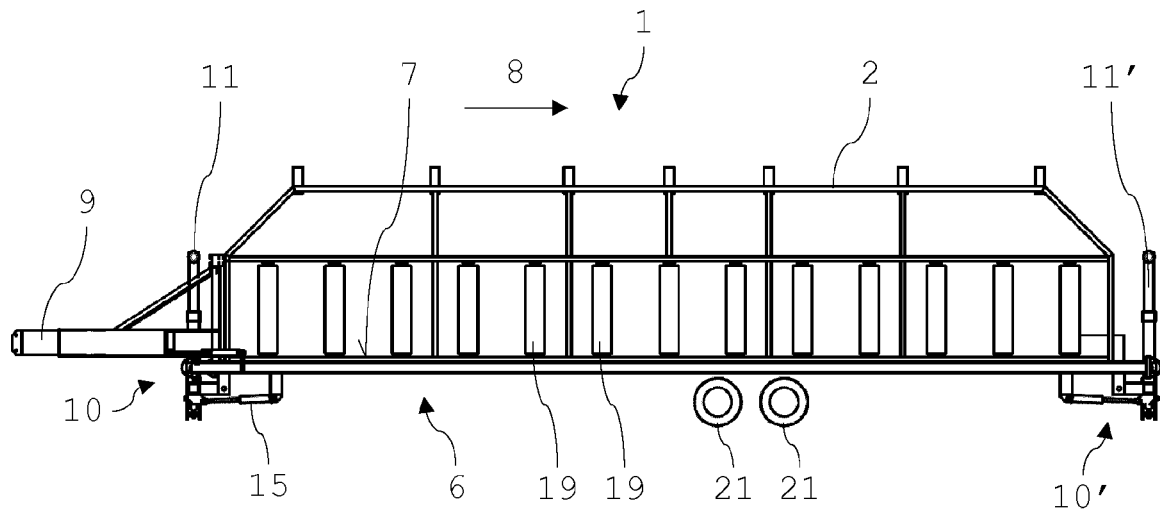


Fig. 1

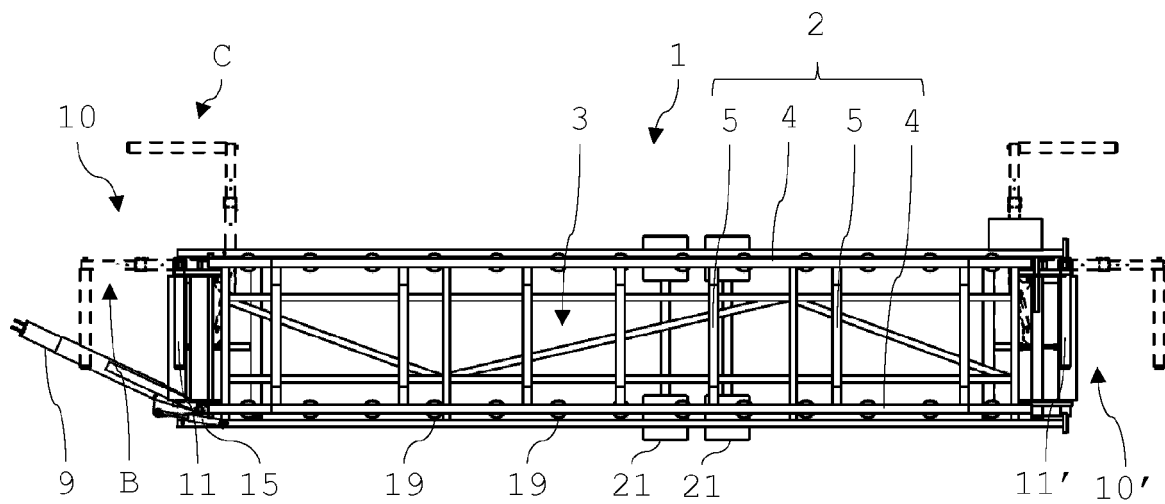


Fig. 2

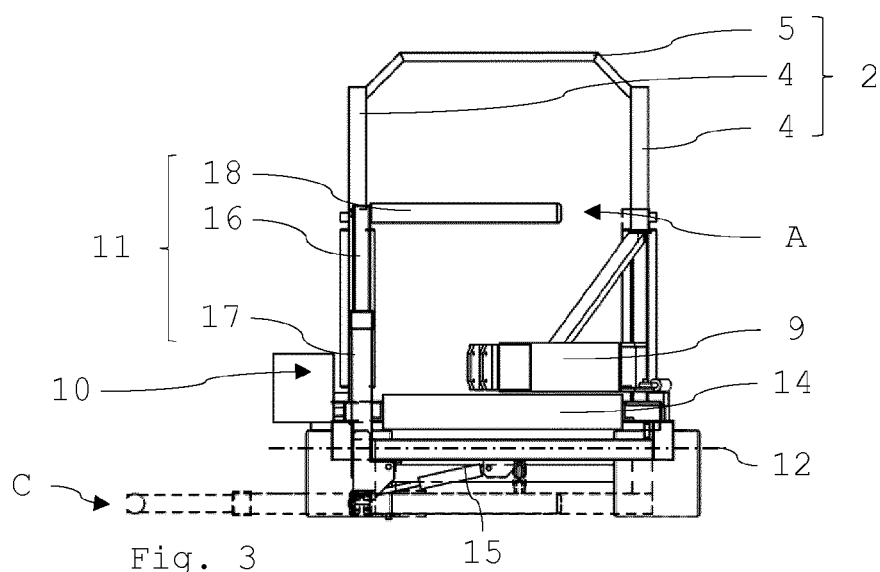


Fig. 3

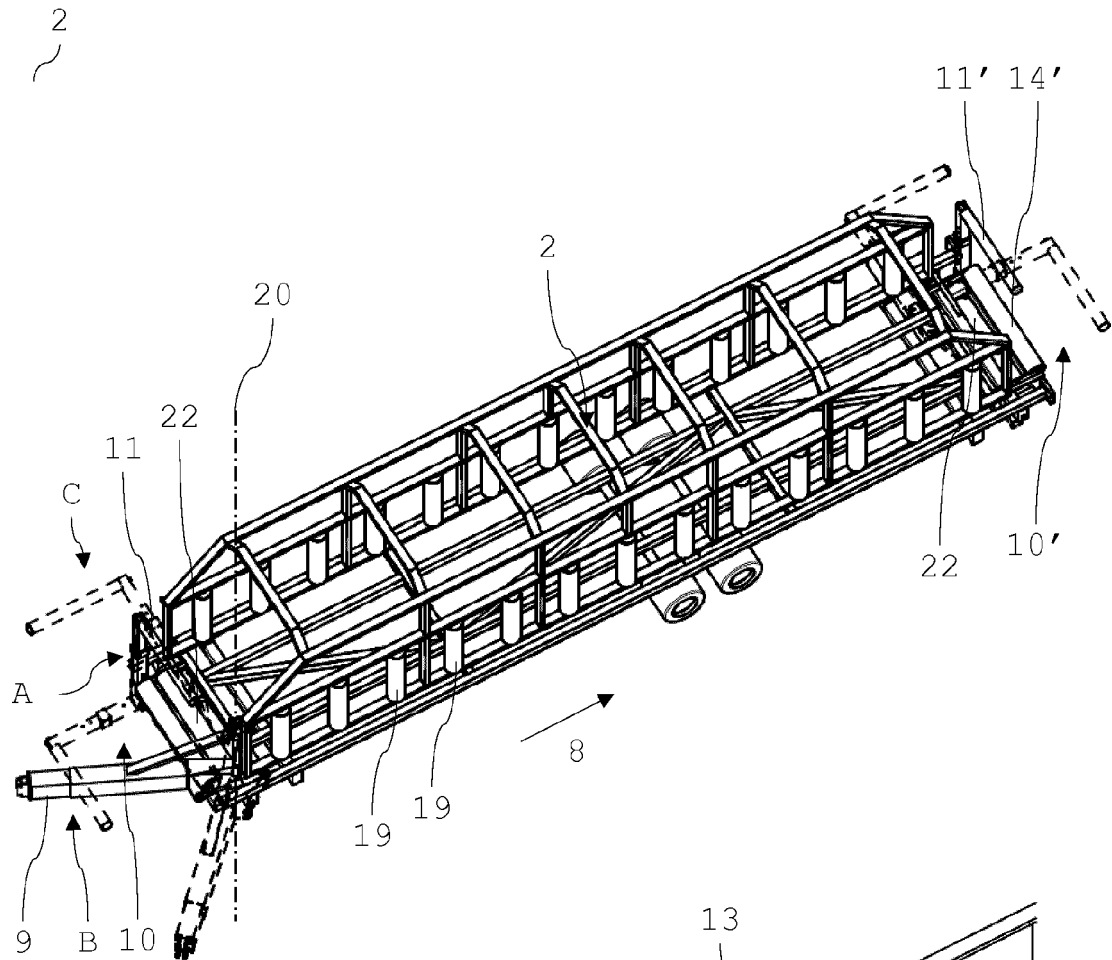


Fig. 4

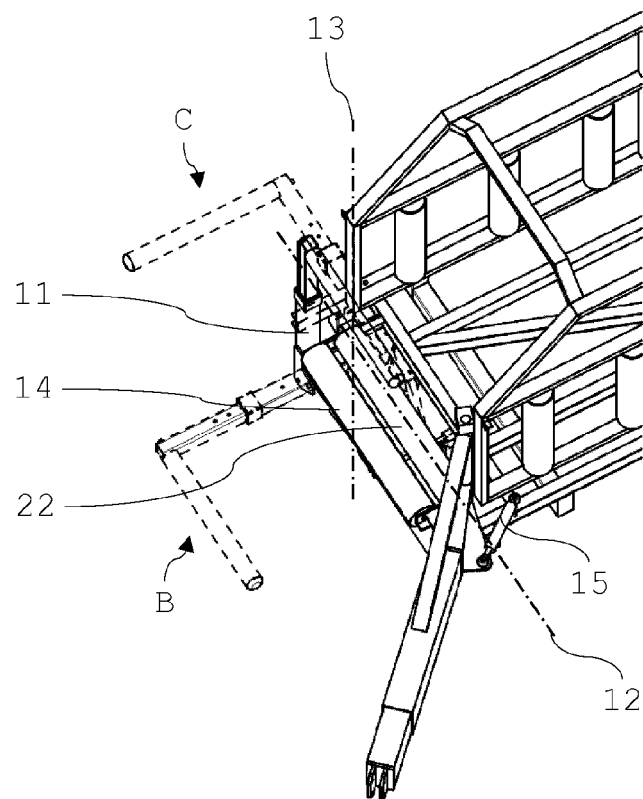


Fig. 5