



(12)

EUROPEAN PATENT APPLICATION

- (43)

Date of publication:  
06.11.2024 Bulletin 2024/45
- (51)

International Patent Classification (IPC):  
B65B 11/58 (2006.01) B65B 11/00 (2006.01)
- (21)

Application number: 24162888.2
- (52)

Cooperative Patent Classification (CPC):  
B65B 11/025; B62B 1/00; B65B 2210/20
- (22)

Date of filing: 12.03.2024

- (84)

Designated Contracting States:  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB  
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL  
NO PL PT RO RS SE SI SK SM TR  
Designated Extension States:  
BA  
Designated Validation States:  
GE KH MA MD TN
- (72)

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Priority: 23.03.2023 ES 202330499 U
- (71)

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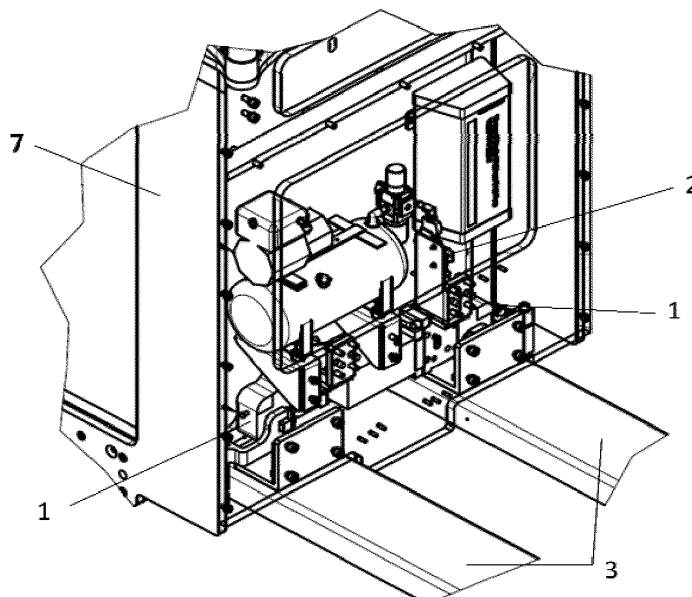
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STABILITY DEVICE FOR MOBILE BALING MACHINES

- (57)

The patent consist of an stability device for mo-  
bile baling machines characterized in that it comprises  
at least two dynamic supports (1) operated by a drive  
assembly (8), said drive assembly being communicated  
with the PLC of the baler (7), wherein the dynamic sup-  
ports, by action of the drive assembly (8), can vary be-
- tween a resting position, in which they are at a certain  
distance from the ground, and a working position in which  
they are rigidly supported on the ground outside an initial  
support base, configuring an increased support base,  
and wherein such supports rigidly replace the cushioned  
supports with wheels of the pallet truck.

FIG. 1



## Description

**[0001]** The invention relates to a stability device for mobile baling machines with arm, plate or rotating ring, among others, in which during the baling cycle a pitch is generated by the movement of the reel holder carriage. The invention comprises a device that activates the deployment of at least one pair of stability reinforcement supports when the machine stops after a certain path and prior to the start of the baling process.

**[0002]** The technical field to which the invention belongs is that of baling machines.

## BACKGROUND OF THE INVENTION

**[0003]** Conventional mobile baling machines usually perform a rotary movement around the load to be baled where a pitch occurs when performing the baling.

**[0004]** Patent EP3792191 relates to a baling machine with a movable arm that has a roll of film for wrapping that surrounds the load by baling it where its base has at least one front wheel and one rear wheel, these being within the perimeter of the machine. In this invention, there is no evidence that there are additional supports that provide stability during baling.

**[0005]** The applicant's own patent EP3835221 relates to an autonomous mobile pallet truck with a driving element suitable for moving and guiding the assembly formed by a driving element, a loading element and a baling element, navigation and guiding equipment, as well as communications between the elements. This machine does not have suitable supports between the forks that can provide greater stability in the baling processes.

**[0006]** WO2010103214 relates to a mobile baling machine with a rotating arm according to the invention, and, in order to reduce the fatigue of the personnel and enhance the attachment of the load placed on a pallet and wrapped with a film, the forklift truck is that of a pallet truck and is fitted with means to make a translational motion in a horizontal plane with the forks being connected to the fixed frame of the baling machine.

**[0007]** None of the above inventions has additional dynamic supports to the base, which, without leaving the perimeter of the base of the baling machine, allow it to have greater stability during the baling processes taking into account the pitching that occurs, for example, with an arm that turns around the load to be baled.

## DESCRIPTION OF THE INVENTION

**[0008]** To solve the above problems, the invention relates to a device suitable for providing stability to a mobile baling machine during baling cycles by increasing its initial support base.

**[0009]** For this purpose, there are mobile parts, which we will call dynamic supports, in addition to the pre-existing fixed ones of the machine, and which are suitable for, in a specific position, providing a greater support sur-

face for the initial support base, configuring an increased support base that improves the stability of the baling machine.

**[0010]** We will call:

5 Dynamic supports are those mobile elements that present a resting position, in which they do not rest on the ground, and a working position in which they rest on the ground where in the working position they expand the support surface of the baling machine generating an increased support base.

10 **[0011]** Increased support base to the support surface of the existing baler when the dynamic supports are in the working position.

15 **[0012]** Initial support base to the support surface of the baler when the dynamic supports are in the resting position.

**[0013]** Since the perimeter of the baler is greater than its initial support base, in a preferred embodiment the increased support base is completely within the perimeter of the machine, since the increase occurs by taking advantage of the space between the perimeter of the baler and the initial support base. Trips and accidents are avoided in this way.

25 **[0014]** In a preferred embodiment the dynamic supports comprise irreversible pneumatic clamps, although in other possible embodiments they may present a telescopic, connecting rod or any other movement that allows passing from a position at a certain distance from the ground to another in contact with it and vice versa.

30 **[0015]** These dynamic supports are arranged in the lower part of the body of a baling machine and, in a resting position, they are raised without contact with the ground, preferably housed in the body of the machine, while in a working position these supports move until they rest on the ground.

35 **[0016]** To activate the displacement of the dynamic supports, the device has a terminal that can be a switch, relay, or any other connector that allows its activation and where it is communicated with the baling system which allows to establish the activation moment (working position) within the work cycle. In a possible embodiment, the switch can be manual, where the operator can manipulate by activating the movement of the clamps prior to starting the baling.

45 **[0017]** The activation for the change from resting to working position occurs at a time prior to the start of the baling cycle, while the opposite operation, of change from working to resting position occurs at a time after baling.

**[0018]** The device comprises:

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- At least two dynamic supports, preferably irreversible pneumatic clamps in communication with a drive assembly. These dynamic supports remain collected at a distance from the ground while no baling cycle is being executed or prepared and deployed by resting on the ground surface at a previous preparatory time point of the baling cycle and for the duration of it.
- A drive assembly, preferably pneumatic, which is in

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synchrony with the pitching movement generated during the baling operations, where the irreversible internal mechanism absorbs part of the energy generated by the pitching, thus preventing the supports from separating from the ground surface.

- Means of communication with the PLC of the baling machine.
- At least one valve, preferably a solenoid valve, controlled by the PLC of the baling machine that activates it prior to the start of the baling by feeding the drive assembly that enables the movement of the dynamic supports.

[0019] The word irreversible must be understood as meaning that the supports, once in the working position, are blocked, without the force exerted by the pitching being able to make them retreat since they will only return to the resting position actuated by the driving group.

[0020] Once the dynamic supports are in the working position, the baler is effectively stabilized and all this, preferably, without leaving the perimeter of its base.

[0021] The mobile baling machine performs a predefined path, stopping later to collect the load and start a baling cycle. At that time, the PLC that controls the baling machine activates the stability system by activating the solenoid valve that enables the movement of the dynamic supports which perform a movement from the resting position to the working position.

[0022] In the case of clamps, the movement is pivoted on its own axis.

[0023] In a preferred embodiment, the dynamic supports are placed on the inside of the perimeter, on the outer sides of the forks, expanding the support base of the baler as much as possible and rigidly replacing the cushioned supports with wheels of the pallet truck, which are the ones that allow rolling.

[0024] In a possible execution, the dynamic supports, in some of their positions, may exceed the perimeter of the base; however this execution can generate problems at the labour level because any element outside the perimeter can lead to trips and accidents.

[0025] In a preferred embodiment, the movement of the dynamic supports is achieved by pneumatic means, the drive assembly handling air flows that require low levels of compression which translates into a lower weight and volume of the assembly and less space required for its assembly.

#### DESCRIPTION OF THE FIGURES

[0026]

Fig. 1 shows a perspective view of the inside of the base of the baler (7) where you can see the solenoid valve (2) that feeds the drive assembly and the dynamic supports (1), in this case irreversible pneumatic clamps, arranged on both sides of the forks (3).

Fig. 2 shows a view from inside the base of the baler where the arrangement of the dynamic supports (1), in this case clamps, which are actuated by the drive assembly (8) thanks to the solenoid valve (4), is better appreciated.

Fig. 3 shows the lower front of the baler (7) where the forks (3) and the dynamic supports (1) are shown in the working position.

#### DESCRIPTION OF AN EMBODIMENT

[0027] The stability device for baling machines (7) comprises dynamic supports (1) suitable for adopting two possible positions: resting and working position.

[0028] These dynamic supports are arranged in such a way as to expand the support base of the baler.

[0029] In the resting position, the dynamic support is collected, at a certain distance from the ground and without contact with it, without contributing to the stability of the assembly with the harness supported on the initial support base.

[0030] In the working position, the dynamic support is extended, in contact with the ground in a rigid manner, expanding the support base of the baler and contributing to its stability while the baler is supported on the extended support base.

[0031] The dynamic supports (1) comprise irreversible pneumatic clamps in communication with a drive assembly.

[0032] The clamps are arranged by expanding the initial support base of the baler, between the outer part of the forks (3) and the perimeter of the base of the baler.

[0033] The movement of these clamps is pneumatic, activated by the action of a solenoid valve (2) coordinated with the electronics of the baler in such a way that these clamps adopt the working position in the preparatory acts of the baling processes and return to the resting position once they are completed.

#### Claims

1. STABILITY DEVICE FOR MOBILE BALING MACHINES **characterized in that** it comprises at least two dynamic supports (1) operated by a drive assembly (8), said drive assembly being communicated with the PLC of the baler (7), wherein the dynamic supports, by action of the drive assembly (8), can vary between a resting position, in which they are at a certain distance from the ground, and a working position in which they are rigidly supported on the ground outside an initial support base, configuring an increased support base, and wherein such supports rigidly replace the cushioned supports with wheels of the pallet truck.

2. STABILITY DEVICE FOR MOBILE BALING MA-

CHINES according to claim 1 **characterised in that** the dynamic supports are within the perimeter of the baler.

3. STABILITY DEVICE FOR MOBILE BALING MA- 5  
CHINES according to claim 1 **characterised in that** the drive assembly is operated by a solenoid valve (4) connected to and controlled by the baler PLC.
4. STABILITY DEVICE FOR MOBILE BALING MA- 10  
CHINES according to claim 1, **characterised in that** the dynamic supports (1) are arranged on the external sides of the forks (3) of the baler (7).
5. STABILITY DEVICE FOR MOBILE BALING MA- 15  
CHINES according to claim 1 **characterised in that** the dynamic supports (1) have a switch that activates their movement.
6. STABILITY DEVICE FOR MOBILE BALING MA- 20  
CHINES according to claim 1 **characterised in that** the dynamic supports comprise irreversible pneumatic clamps.

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FIG. 1

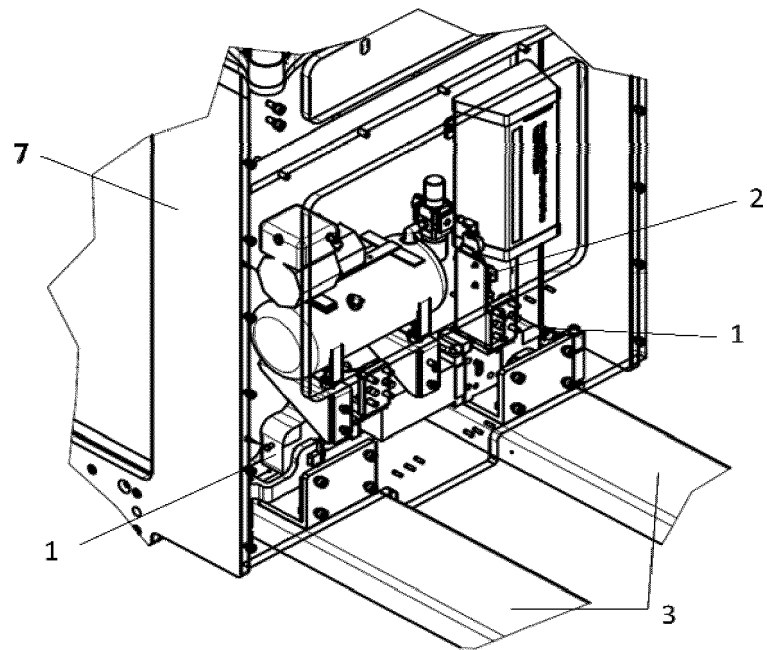


FIG. 2

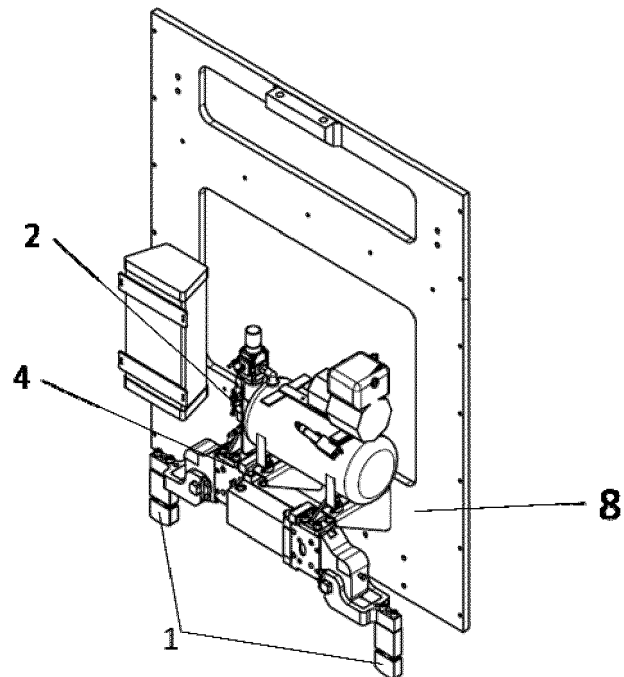
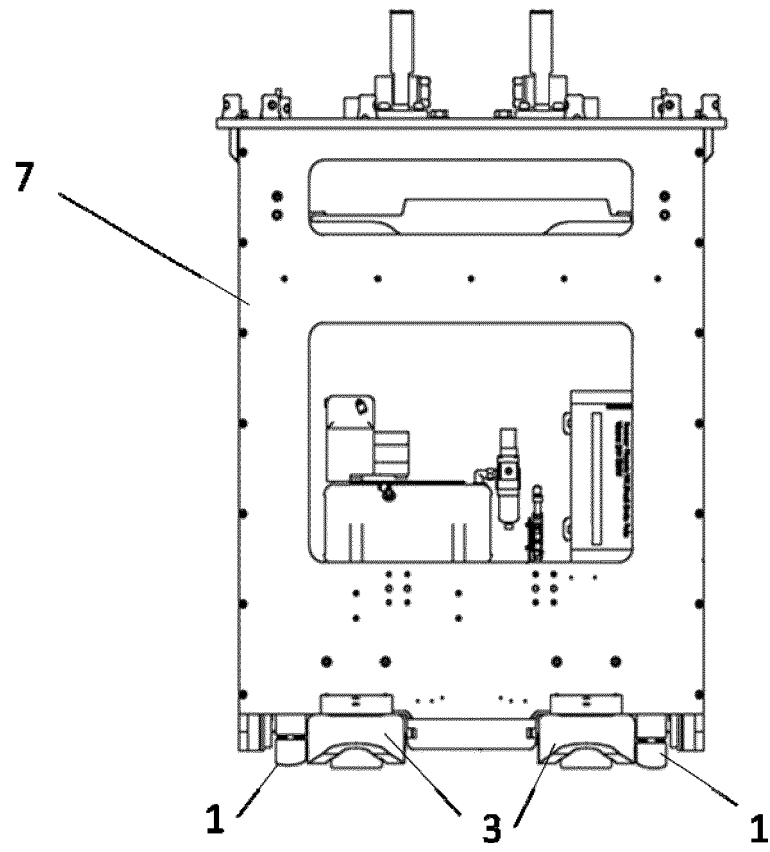


FIG. 3





## EUROPEAN SEARCH REPORT

Application Number

EP 24 16 2888

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EPO FORM 1503 03.82 (P04C01)

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			TECHNICAL FIELDS SEARCHED (IPC)
			B65B
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>23 September 2024</b>	Examiner <b>Bongibault, Patrick</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

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ON EUROPEAN PATENT APPLICATION NO.

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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