

Turnover Plate Mechanism on Air Pallet Trailer

FIELD OF THE INVENTION

[0001] The invention relates to the field of air pallet trailers, and particularly to a turnover plate mechanism on an air pallet trailer.

BACKGROUND OF THE INVENTION

[0002] An air pallet trailer currently used by airline companies at each airport is generally equipped with a turnover plate mechanism in which a turnover plate needs to be upturned manually to constrain an air pallet. However, in each airport, operators sometimes forget to upturn turnover plates during operation. In this case, air pallets fully loaded with cargoes will fall off during transportation, which causes flight delay and cargo damage, or even may cause major safety accidents injuring people.

[0003] It is therefore an urgent need for a turnover plate mechanism on an air pallet trailer, which can be automatically upturned to overcome human misoperation and hence avoid safety accidents.

SUMMARY OF THE INVENTION

[0004] In view of the above problems, the invention provides a turnover plate mechanism on an air pallet trailer, which can be automatically upturned to overcome human misoperation and hence avoid safety accidents.

[0005] To achieve the above object of the invention, the invention provides the

following technical solution: a turnover plate mechanism on an air pallet trailer according to the invention comprises an external member, an internal member, a first cross bar, a second cross bar, a third cross bar, a fourth cross bar and a handle, wherein the external member is composed of a first connecting rod, a thimble, a cam, a touch bar and a second connecting rod, the internal member is composed of a baffle plate, an L-shaped turnover plate and a tension spring, a lower end of the handle is connected with the first cross bar to form an “L” shape, the cam is arranged at one end of the first cross bar near the handle, the cam is connected with the thimble which is connected with the second connecting rod, one end of the first cross bar far from the handle is connected with the first connecting rod, one end of the first connecting rod is fixed on the first cross bar, the other end of the first connecting rod is fixed on the second cross bar, the touch bar is arranged at a right side of the first connecting rod, the second connecting rod is connected with the touch bar by the third cross bar, the baffle plate and the L-shaped turnover plate are arranged inside a copper sleeve, the baffle plate penetrates through a left end of the copper sleeve, the baffle plate is arranged at a right side of the second cross bar, the L-shaped turnover plate is arranged at a right side of the baffle plate, a right end of the copper sleeve is fixed on the external member by the fourth cross bar, one end of the tension spring is fixed on the first connecting rod, and the other end of the tension spring is fixed on the fourth cross bar.

[0006] The first cross bar, the second cross bar, the third cross bar and the fourth cross bar are fixed on the external member via bolts.

[0007] Individual components on the first connecting rod are fixedly connected via bolts.

[0008] Individual components on the second connecting rod are fixedly connected via bolts.

[0009] The second connecting rod is provided with a compression spring.

[0010] The touch bar can rotate freely by 90°.

[0011] The baffle plate can be overturned inwards.

[0012] One said turnover plate mechanism is respectively mounted at a left side and a right side of the air pallet trailer.

[0013] The advantages and beneficial effects of the invention are as follows: the invention provides a turnover plate mechanism on an air pallet trailer, which can be automatically upturned to overcome human misoperation and hence avoid safety accidents, wherein a turnover plate with an anti-misoperation design is automatically upturned to constrain a pallet without manual operation when an air pallet on an airplane is delivered to a pallet trailer by a lifting platform; and the turnover plate can also be conveniently locked at a lying position when the pallet needs to be removed from the trailer, and the turnover plate is automatically restored after the pallet is removed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] In order to illustrate the technical solutions in the embodiments of the invention or in the prior art more clearly, the accompanying drawings necessary

in the descriptions of the embodiments or the prior art will be simply introduced below. Apparently, the accompanying drawings in the descriptions below only involve some embodiments of the invention, and one of ordinary skill in the art can also obtain other accompanying drawings without inventive work based on these accompanying drawings.

[0015] Fig. 1 is a schematic structural view of a turnover plate mechanism.

[0016] Description of reference numerals

[0017] 1. baffle plate; 2. L-shaped turnover plate; 3. tension spring; 4. handle; 5. first connecting rod 6. thimble; 7. cam; 8. touch bar; 9. second connecting rod

DETAILED DESCRIPTION OF THE INVENTION

[0018] Particular embodiments of the invention will be further described below with reference to the drawings and embodiments. The following embodiments are only used for describing the technical solutions of the invention more clearly and cannot limit the protection scope of the invention.

[0019] As shown in Fig. 1, a turnover plate mechanism on an air pallet trailer comprises an external member, an internal member, a first cross bar, a second cross bar, a third cross bar, a fourth cross bar and a handle 4, wherein the external member is composed of a first connecting rod 5, a thimble 6, a cam 7, a touch bar 8 and a second connecting rod 9, the internal member is composed of a baffle plate 1, an L-shaped turnover plate 2 and a tension spring 3, a lower end of the handle 4 is connected with the first cross bar to form an “L” shape, the cam 7 is

arranged at one end of the first cross bar near the handle, the cam 7 is connected with the thimble 6 which is connected with the second connecting rod 9, one end of the first cross bar far from the handle is connected with the first connecting rod 5, one end of the first connecting rod 5 is fixed on the first cross bar, the other end of the first connecting rod 5 is fixed on the second cross bar, the touch bar 8 is arranged at a right side of the first connecting rod 5, the second connecting rod 9 is connected with the touch bar 8 by the third cross bar, the baffle plate 1 and the L-shaped turnover plate 2 are arranged inside a copper sleeve, the baffle plate 1 penetrates through a left end of the copper sleeve, the baffle plate 1 is arranged at a right side of the second cross bar, the L-shaped turnover plate 2 is arranged at a right side of the baffle plate 1, a right end of the copper sleeve is fixed on the external member by the fourth cross bar, one end of the tension spring 3 is fixed on the first connecting rod 5, and the other end of the tension spring 3 is fixed on the fourth cross bar.

[0020] The first cross bar, the second cross bar, the third cross bar and the fourth cross bar are fixed on the external member via bolts.

[0021] Individual components on the first connecting rod 5 are fixedly connected via bolts.

[0022] Individual components on the second connecting rod 9 are fixedly connected via bolts.

[0023] The second connecting rod 9 is provided with a compression spring.

[0024] The touch bar 8 can rotate freely by 90°. The baffle plate 1 can be

overturned inwards.

[0025] One said turnover plate mechanism is respectively mounted at a left side and a right side of the air pallet trailer.

[0026] When a pallet is pushed into the trailer from one side, the pallet collides with an inclined plane of the baffle plate 1; the baffle plate 1 is overturned inwards by 10° after being pressed, thus driving the L-shaped turnover plate 2 to be overturned outwards to a lying state; the pallet slides on the automatic turnover plate in a lying state into a corresponding position in the trailer; the pallet passes through the baffle plate 1, and the baffle plate 1 and the L-shaped turnover plate 2 are overturned to restore their original locked state under a pulling force from the tension spring 3; and then the pallet is constrained by the baffle plate 1 in its X direction and constrained by the L-shaped turnover plate 2 in its Z direction, thus completing locking.

[0027] When a pallet needs to be removed from the trailer, the handle 4 is twisted inwards by 90° , and the L-shaped turnover plate 2 is pulled and overturned to a lying state by the first connecting rod 5; then the cam 7 on the handle 4 is clamped by the thimble 6, and the lying state of the L-shaped turnover plate 2 is locked; one side of the pallet in its X direction is unconstrained and the pallet can move outwards in its X direction; and the touch bar 8 rotates outwards when the pallet moves outwards to collide with the touch bar 8, the thimble 6 is pulled by the second connecting rod 9 to unlock the cam 7, and the baffle plate 1 and the L-shaped turnover plate 2 are overturned to restore their original locked state after

the pallet is removed from the trailer.

[0028] The above description only refers to preferred embodiments of the invention and is not intended to limit the invention. Any modification, equivalent replacement, improvement and the like made within the sprit and principle of the invention shall be included within the protection scope of the invention.

CLAIMS

1. A turnover plate mechanism on an air pallet trailer, comprising an external member, an internal member, a first cross bar, a second cross bar, a third cross bar, a fourth cross bar and a handle, the external member being composed of a first connecting rod, a thimble, a cam, a touch bar and a second connecting rod, the internal member being composed of a baffle plate, an L-shaped turnover plate and a tension spring, a lower end of the handle being connected with the first cross bar to form an “L” shape, the cam being arranged at one end of the first cross bar near the handle, the cam being connected with the thimble which is connected with the second connecting rod, one end of the first cross bar far from the handle being connected with the first connecting rod, one end of the first connecting rod being fixed on the first cross bar, the other end of the first connecting rod being fixed on the second cross bar, the touch bar being arranged at a right side of the first connecting rod, the second connecting rod being connected with the touch bar by the third cross bar, the baffle plate and the L-shaped turnover plate being arranged inside a copper sleeve, the baffle plate penetrating through a left end of the copper sleeve, the baffle plate being arranged at a right side of the second cross bar, the L-shaped turnover plate being arranged at a right side of the baffle plate, a right end of the copper sleeve being fixed on the external member by the fourth cross bar, one end of the tension spring being fixed on the first connecting rod, and the other end of the tension spring being fixed on the fourth cross bar.
2. The turnover plate mechanism on an air pallet trailer according to claim 1,

wherein the first cross bar, the second cross bar, the third cross bar and the fourth cross bar are fixed on the external member via bolts.

3. The turnover plate mechanism on an air pallet trailer according to claim 1, wherein individual components on the first connecting rod are fixedly connected via bolts.

4. The turnover plate mechanism on an air pallet trailer according to claim 1, wherein individual components on the second connecting rod are fixedly connected via bolts.

5. The turnover plate mechanism on an air pallet trailer according to claim 1, wherein the second connecting rod is provided with a compression spring.

6. The turnover plate mechanism on an air pallet trailer according to claim 1, wherein the touch bar can rotate freely by 90°.

7. The turnover plate mechanism on an air pallet trailer according to claim 1, wherein the baffle plate can be overturned inwards.

8. The turnover plate mechanism on an air pallet trailer according to claim 1, wherein one said turnover plate mechanism is respectively mounted at a left side and a right side of the air pallet trailer.