WHAT IS CLAIMED IS:

1. A pallet lifting device for a shuttle vehicle, comprising a shuttle vehicle (30) and a pallet (40), wherein lifting plates (10) are disposed on an upper part of the shuttle vehicle (30), and a driving device on the shuttle vehicle (30) drives the lifting plates (10) to perform lifting movement; a plurality of support feet (410) are disposed at a bottom of the pallet (40), and one of the plurality of support feet (410) close to a center of the pallet (40) is marked as an anti-deviation foot (420); and a front clamping claw (110A) and a rear clamping claw (110B) are disposed forth and back on the shuttle vehicle (30) along a traveling direction; the front clamping claw (110A) and the rear clamping claw (110B) are linked and connected to each of the lifting plates (10) via linkage structures (100); and in a state that the pallet (40) is horizontally placed on the lifting plates (10), lifting actions of the lifting plates (10) enable the front clamping claw (110A) and the rear clamping claw (110B) to get close to each other while performing upward movement under a transmission of the linkage structures (100), and be located on a front side and a rear side of the anti-deviation foot (420) in the traveling direction;

each of the linkage structures (100) comprises a fixed block (130), a driving rod A (140A), a driving rod B (140B), a driving block (150), a connecting rod A (160A), a connecting rod B (160B), a connecting rod C (160C), and a connecting rod D (160D); the fixed block (130) is fixedly mounted inside the shuttle vehicle (30), an upper end of the driving block (150) is fixedly connected to a lower end of the lifting plate (10); one end of the driving rod A (140A) and one end of the driving rod B (140B) are hinged to a front side and a rear side of the driving block (150) via a front hinge (190A) and a rear hinge (190B), respectively; an other end of the driving rod A (140A) and an other end of the driving rod B (140B) are hinged to a lower end of the front clamping claw (110A) and a lower end of the rear clamping claw (110B) via a first lower hinge (210A) and a second lower hinge (210B), respectively; and the driving rod A (140A) and the driving rod B (140B) are symmetrically disposed forth and back relative to the diving block (150);

one end of the connecting rod A (160A), one end of the connecting rod B (160B), one end of the connecting rod C (160C), and one end of the connecting rod D (160D) are hinged to a front side and a rear side of the fixing block (130) via a hinge A (180A), a hinge B (180B), a hinge C (180C), and a hinge D (180D), respectively; an other end of the connecting rod A (160A) and an other end of the connecting rod C (160C) are hinged to the lower end of the front clamping claw (110A) and the lower end of the rear clamping claw (110B) via a first upper hinge (170A) and a second upper hinge (170B), respectively; an other end of the connecting rod B (160B) and an other end of the connecting rod D (160D) are hinged at the lower end of the front clamping claw (110A) and the lower end of the rear clamping claw (110B) together with the driving rod A (140A) and

the driving rod B (140B) via the first lower hinge (210A) and the second lower hinge (210B), respectively; the first upper hinge (170A) and the second upper hinge (170B) are respectively located above the first lower hinge (210A) and the second lower hinge (210B); and the connecting rod A (160A) and the connecting rod B (160B) are symmetrically disposed forth and back with respect to the hinge C (180C) and the hinge D (180D) relative to the fixed block (130);

the first upper hinge (170A), the first lower hinge (170B), the hinge A (180A), and the hinge B (180B) form four end points of a parallelogram, connecting lines between the four end points form a first parallelogram; a connecting line between the first upper hinge (170A) and the first lower hinge (210A) is represented by L1, a connecting line between the hinge A (180A) and the hinge B (180B) is represented by L2, a connecting line between the first upper hinge (170A) and the hinge A (180A) is represented by L3, a connecting line between the first lower hinge (210A) and the hinge B (180B) is represented by L4; and in a process of driving the front clamping claw (110A) and the rear clamping claw (110B) to move synchronously by the driving block (150), L1 is parallel to L2, and L3 is parallel to L4;

the second upper hinge (170B), the second lower hinge (210B), the hinge C (180C), and the hinge D (180D) form four end points of a parallelogram, connecting lines between the four end points form a second parallelogram; a connecting line between the second upper hinge (170B) and the second lower hinge (210B) is represented by L5, a connecting line between the hinge C (180C) and the hinge D (180D) is represented by L6, a connecting line between the second upper hinge (170B) and the hinge C (180C) is represented by L7, a connecting line between the second lower hinge (210B) and the hinge D (180D) is represented by L8; and in a process of driving the front clamping claw (110A) and the rear clamping claw (110B) to move synchronously by the driving block (150), L1 is parallel to L2, L3 is parallel to L4, and the first parallelogram and the second parallelogram are symmetrically disposed relative to the fixed block (130);

the hinge B (180B), the hinge D (180D), the front hinge (190A), the rear hinge (190B), the first lower hinge (210A), and the second lower hinge (210B) form six end points of a hexagon, connecting lines between the six end points form a first hexagon; and the linkage structure (100) drives the front clamping claw (110A) and the rear clamping claw (110B) to get close to each other and simultaneously move upward relative to the fixed block (130) by means of a linkage relation among the first parallelogram, the second parallelogram, and the first hexagon;

a front through slot (40A) and a rear through slot (40B) are respectively formed in the lifting plate (10) along the traveling direction; an upper end of the front clamping claw (110A) and an upper end of the rear clamping claw (110B) are respectively corresponding to the front through slot (40A) and the rear through slot (40B); and the front clamping claw (110A) and the rear clamping claw (110B) respectively pass through the front through slot (40A) and the rear through

slot (40B) upward in a process that the front clamping claw (110A) and the rear clamping claw (110B) get close to each other while performing upward movement under the transmission of the linkage structures (100); and

in an initial state, a plurality of pallets (40) are racked on a goods shelf, goods are placed on each of the pallets (40), and when the lifting plate (10) is in a non-lifting state, an upper end of the front clamping claw (110A) and an upper end of the rear clamping claw (110B) are both lower than a lower end of the anti-deviation foot (420), so that the shuttle vehicle (30) moves on a guide rail and is capable of smoothly shuttling below the pallets (40).

2. The pallet lifting device for a shuttle vehicle according to claim 1, wherein two mounting plates (20) are symmetrically disposed on both sides inside the shuttle vehicle (30) along the traveling direction, the two mounting plates (20) are located below the lifting plates (10); one side of the fixed block (150) along a length direction is fixed on each of the two mounting plates (20); and an upper surface of the driving block (150) is fixedly connected to a center of a lower surface of the lifting plate (10).

3. The pallet lifting device for a shuttle vehicle according to claim 1, wherein a front guide notch (200A) and a rear guide notch (200B) are respectively disposed at upper ends of mutual approaching sides of the front clamping claw (110A) and the rear clamping claw (110B); and shapes of the front guide notch (200A) and the rear guide notch (200B) are both horn-shaped.

4. A working method of the pallet lifting device for a shuttle vehicle according to claim 1, wherein in an initial state, when the shuttle vehicle (30) moves along a guide rail to a position below any pallet (40), the lifting plates (10) perform lifting movement driven by a driving device of the shuttle vehicle (30); the driving block (150) moves with the lifting movement of the lifting plate (10) and is capable of vertically move upward relative to a fixed block (130); and in a process of vertical upward movement of the driving block (150), the linkage structure (100) drives the front clamping claw (110A) and the rear clamping claw (110B) to get close to each other and synchronously move upward relative to the fixed block (130) by means of a linkage relation among a first parallelogram, a second parallelogram, and a first hexagon; in this process, an upper end of the front clamping claw (110A) and an upper end of the rear clamping claw (110B) respectively pass through a corresponding front through slot (40A) and a corresponding rear through slot (40B) upward; and when the lifting movement of the lifting plate (10) is stopped, the upper end of the front clamping claw (110A) and the upper end of the rear clamping claw (110B) protrude out of an upper surface of the lifting plate (10) and are respectively located on the front side and the rear side of the anti-deviation foot (420) in the traveling direction, limiting the anti-deviation foot (420).