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Design of Shear Screw Jack

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Abstract

When the existing shear jack faces a heavy object, the threads on the two-way threaded rod will be damaged, the support function of the jack has the risk of failure. Through further structural innovation, this hidden danger is eliminated and the service life and safety of the jack are improved.

Keywords

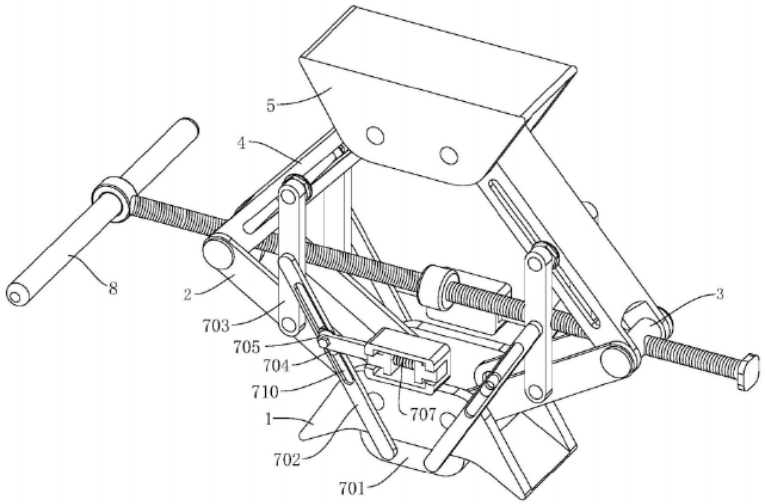
Shear Jack Support; Improve Service Life; Increase Security; Innovative Design.

1. Design Background

Scissor jack is a type of jack. Because its structure and shape are like scissors, it is called shear jack. The scissor jack, also known as the support jack, is a portable and fast product that is supplied by major domestic automobile factories. It is composed of the upper support rod and the lower support rod made of metal plates.

When the existing shear-type jack is used, the angle of the two support rods is changed through the two-way threaded rod, so that the target object is lifted. After the object is lifted, the pressure of the object will be borne by the thread on the two-way threaded rod after the support rod is disassembled. When facing a heavy object, the thread on the two-way threaded rod will be damaged, making the support function of the jack ineffective, Cause accidental injury and/or economic loss. Therefore, the existing technology needs to be further improved and improved.

2. Innovative Design



1. Underframe; 2. Lower support arm; 3. Rotating shaft; 4. Upper support arm; 5. Jacking frame 6. Two-way threaded rod; 7. Auxiliary support mechanism; 8. Rotary rod; 701. Install the base; 702. No. 1 connecting rod; 703. No. 2 connecting rod; 704. Sliding piece; 705. Extension rod; 706. Fixing box; 707. Spring; 708. Linkage rod; 709.

Fig 1. Innovative design drawing

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The purpose of this design is to provide a scissor-type jack. By pulling the extension rod and the fixed box, the relative length of the extension rod will change. The moving extension rod will change the angle of the No. 1 connecting rod, and the No. 1 connecting rod will change the angle of the No. 2 connecting rod, so that the connecting rod between the No. 2 connecting rod will decompose the pressure that the upper support arm needs to bear, so that the jack can maintain the jacking state, The pressure that the two-way threaded rod needs to bear is reduced, and the service life of the two-way threaded rod is extended. At the same time, it can also lift the target object with higher quality.

Adjusting bolt;

upper ends of a group of lower support arms on the same side through a rotating shaft. A two-way threaded rod is arranged between the two rotating shafts. The two-way threaded rod is vertically arranged with the rotating shaft, and its two ends are respectively threaded with the rotating shaft threads.

There are two auxiliary support mechanisms, which are relatively arranged on the front and rear sides of the underframe. The lower ends of the two auxiliary support mechanisms are fixed on the underframe, and the upper ends are connected by the connecting rods located in the through-groove. Each group of lower support arms consists of two lower support arms arranged opposite to each other in the front and rear. The lower end of the lower support arms of the same group is rotationally connected with the front and rear side walls of the underframe, and the upper end is rotationally connected with the rotating shaft. The auxiliary support mechanism includes an elastic connection component, two No. 1 connecting rods, and two No. 2 connecting rods. The lower end of the No. 1 connecting rod is rotatably connected with the underframe through the mounting base. The two No. 1 connecting rods are rotationally connected to the outer wall of one side of the mounting base. The outer wall of one side of the two said No. 1 connecting rods is provided with a chute. The two No. 2 connecting rods are rotationally connected to the outer wall of one side of the corresponding No. 1 connecting rod, and one end of the two No. 2 connecting rods is rotationally connected to the outer wall of one side of the corresponding lower support arm. The outer wall of one side of the two No. 2 connecting rods is slidably connected to the outer wall of one side of the corresponding shaft.

The elastic connection component includes a fixed box, a spring, two sliding pieces and two extension rods. The two sliding pieces are respectively sliding in the corresponding chute, and the two extension rods are fixed on the outer wall of one side of the corresponding sliding piece through the limit bolts.

The fixing box is movably sleeved between the outer walls of two extension rods, the spring is arranged inside the fixing box, and the two ends of the spring are fixedly connected with one end of the corresponding extension rod respectively.

The penetration groove is a long strip of perforation, and its extension direction is consistent with the length direction of the upper support arm.

Both ends of the connecting rod pierce through the front and rear side walls of the upper support arm and are fixedly connected with the upper ends of the two No. 2 connecting rods corresponding to the two auxiliary support mechanisms. The outer walls of both ends of the connecting rod are threaded with two adjusting bolts, which are fixedly connected with the upper end of the No. 2 connecting rod.

One end of the two-way threaded rod is fixedly connected with a rotating ring, and the internal movable insert of the rotating ring is provided with a rotating rod. The other end of the two-way threaded rod is fixedly connected with the limit block.

3. Innovation Effect

By adopting the above technical scheme, the beneficial technical effect of this design is that the shear jack changes the relative length of the extension rod by pulling the extension rod and the fixed box, and the moving extension rod will change the angle of the No. 1 connecting rod, and the No. 1 connecting rod will change the angle of the No. 2 connecting rod, so that the connecting rod between the No. 2 connecting rod will decompose the pressure that the upper support arm needs to bear, so

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