Design of a Reciprocating Abrasive Flow Polishing Machine

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Abstract. A reciprocating abrasive flow polishing machine, including the body, the first hydraulic cylinder, the first push rod and the first cylinder, the reciprocating abrasive flow polishing machine, is provided with four placing cylinder, and placed inside the cylinder is provided with a limited block, and the limit block and the inner wall of the cylinder is installed between the elastic spring, while the limit block is installed on the outer surface of the ball, In this way, the pipe workpiece of different diameters can be placed in a limit, to ensure the stability of the workpiece processing, improve the processing progress of the workpiece.

Keywords: Abrasive flow polishing, reciprocating, placing cylinder.

1. Introduction

Abrasive flow polishing machine is usually used for processing the inner wall of tubular workpiece, especially the inner wall with threads and other shapes of the workpiece, through the flow of abrasive flow medium to achieve polishing effect, widely used in the processing industry.

There are still some shortcomings in the use of the existing abrasive flow polishing machine, such as not easy to limit the number of tubular workpiece, resulting in slow processing of the workpiece, and not easy to reciprocating processing, can not make the abrasive flow reciprocating flow, thus reducing the processing effect of the workpiece, but also reduce the efficiency of the polishing machine, Therefore, a reciprocating abrasive flow polishing machine is proposed, which can realize efficient and fast polishing of workpiece [1-3].

2. Technical Design Scheme

At present, the abrasive flow polishing machine on the market is not easy to limit the number of tubular workpiece, resulting in slow processing of the workpiece, and not easy to reciprocating processing, can not make the abrasive flow reciprocating flow, thus reducing the processing effect of the workpiece, but also reduce the efficiency of the polishing machine.

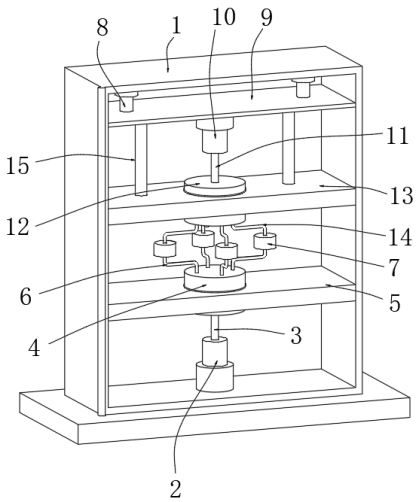

Figure 1. Schematic diagram of internal three-dimensional structure

1, the body; 2, the first hydraulic cylinder; 3, the first putt; 4. The first cylinder; 5, the first fixed plate; 6. Take over the first company; 7. Place the cylinder; 8, the second hydraulic cylinder; 9. Horizontal plate; 10, the third hydraulic cylinder; 11. The second putt; 12. Second cylinder; 13, the second fixed plate; 14. Take over for the second time; 1401, cover; 15. Limit bar; 16, limit block; 17, elastic spring; 18. Ball bearing; 19. Push the board.

The utility model relates to a reciprocating abrasive flow polishing machine, which comprises a body, a first hydraulic cylinder, a first push rod and a first cylinder. The internal body is fixed with a first hydraulic cylinder through a bolt, and the output end of the first hydraulic cylinder is connected with the first push rod, and the top of the first push rod is located inside the first cylinder [4, 5].

3. Example Given to Illustrate

FIG. 1-Fig. 5, a reciprocating abrasive flow polishing machine, including body 1, a first hydraulic cylinder 2, a first push rod 3 and a first cylinder 4, the body 1 is fixed by bolts inside the first hydraulic cylinder 2, and the output end of the first hydraulic cylinder 2 is connected with the first push rod 3, and the top of the first push rod 3 is located inside the first cylinder 4.

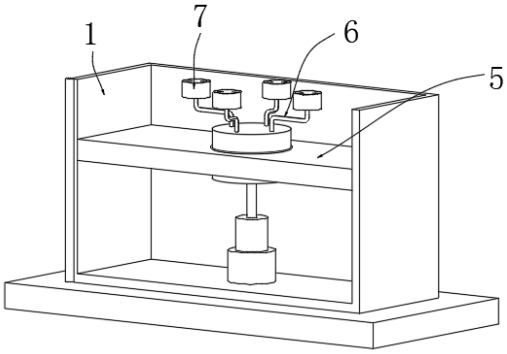

Figure 2. Schematic diagram of connecting the first connecting pipe and the placing cylinder

In using the reciprocating abrasive flow polishing machine, first place the body 1 in the corresponding position, then open the door, squeeze the limit block 16 in the direction of the inner wall of the placing cylinder 7, compress the elastic spring 17, and then place the tubular workpiece to be polished in the placing cylinder 7, release the limit block 16, under the action of the elastic spring 17, Can make the limit block 16 surface ball 18 on the workpiece for tight limit, so that the workpiece in processing to maintain stability, because placed cylinder 7 set four, so can be processed at the same time for four workpiece, improve the processing progress of the workpiece [6, 7].

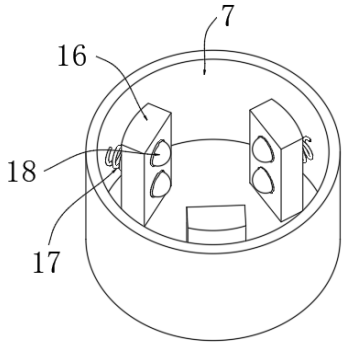

Figure 3. Placement cylinder three-dimensional structure diagram

The second hydraulic cylinder 8 is fixed on the inner top of the body 1, the output end of the second hydraulic cylinder 8 is connected with the horizontal plate 9, and the bottom of the horizontal plate 9 is fixed with a third hydraulic cylinder 10 by bolts, and the output end of the third hydraulic cylinder 10 is connected with the second push rod 11, and the bottom end of the second push rod 11 is located inside the second cylinder 12. Both transverse plate 9 and the second fixed plate 13 are fitted to the

inner wall of the body 1, and the upper and lower ends of transverse plate 9 and the second fixed plate 13 are welded with the limit rod 15, and the outer wall of the second fixed plate 13 and the second barrel 12 are welded [8].

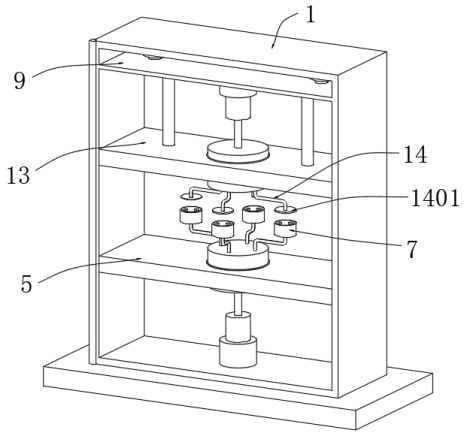

Figure 4. Block cover and placing cylinder separation state structure diagram

The second fixed plate 13 is arranged on the outside of the second cylinder 12, the bottom end of the second cylinder 12 is connected with one end of the second nozzle 14, the limiting rod 15 is installed between the transverse plate 9 and the second fixed plate 13, the top of the first push rod 3 and the bottom end of the second push rod 11 are installed with a push plate 19. And the inner wall of push plate 19, the first cylinder 4 and the second cylinder 12 are mutually fit [9].

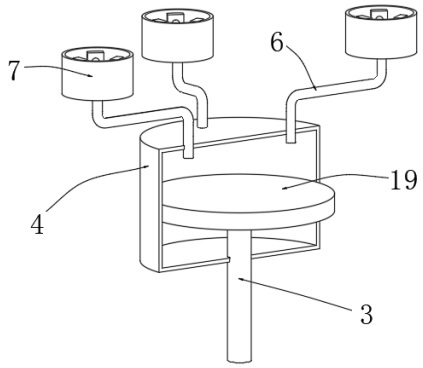

Figure 5. The first push rod and push plate connection three-dimensional structure diagram

After the workpiece is placed, the staff start the second hydraulic cylinder 8, the second hydraulic cylinder 8 will push the transverse plate 9 down, through the limit rod 15 to drive the second fixed plate 13 down together, and the second fixed plate 13 will drive the second cylinder 12, the second nozzle 14 and the cover 1401 down together, so that the cover 1401 to place the top of the cylinder 7 blocked. At the same time, it does not affect the discharge of No.2 No.2 nozzle 14, so as to ensure that the abrasive flow into the workpiece normally, and then close the door, start the third hydraulic cylinder 10, the third hydraulic cylinder 10 will push the second push rod 11 and the bottom of the second push rod 11 to move the pushing plate 19, the abrasive flow inside the second cylinder 12 out, so that the abrasive flow into the workpiece through the second nozzle 14. Polishing operation is carried out on the inner wall of the workpiece. With the increase of abrasive flow, it will flow to the first cylinder 4 through the first nozzle 6, and then start the first hydraulic cylinder 2. The first hydraulic cylinder 2 will drive the first push rod 3 to rise, and the first push rod 3 will drive the top push plate 19 to rise together to promote the abrasive flow. In this way, the abrasive flow will enter the placing cylinder 7 through the first continuous nozzle 6, and then enter the second cylinder 12 through the second continuous nozzle 14. The first hydraulic cylinder 2 and the third hydraulic cylinder 10 work alternately, so that the reciprocating extrusion of abrasive flow can be realized, and the workpiece can be better polished and the polishing effect can be improved [10, 11].

4. Conclusion

Compared to existing technology, this design has the following beneficial effects:

(1) The reciprocating abrasive flow polishing machine is provided with four placing cylinder, and placed inside the cylinder is provided with a limited block, and between the limit block and the inner wall of the cylinder is installed with elastic spring, at the same time, the outer surface of the limit block is installed with ball, so that the tube workpiece of different diameters can be placed in the limit, ensure the stability of the workpiece processing, improve the processing progress of the workpiece [12].

(2) The reciprocating abrasive flow polishing machine, placing the bottom of the cylinder through the first consecutive nozzle and the first cylinder is connected with each other, and placing the cylinder is arranged above the cover, the cover is installed in the bottom of the second tube, and the second second tube through the cover, the diameter of the cover and the diameter of the cylinder is the same, so that the abrasive flow for reciprocating circulation, the inner wall of the workpiece for reciprocating polishing processing, Improve the machining effect of the workpiece.

Acknowledgements

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