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(54) Modular vice for the quick displacement of the mobile jaw.

(57) Modular vice for the quick displacement of the mobile jaw where a block connected to said jaw is quickly displaceable along the vice guides in the lawer parts of which opposite constant pitch seats are made out, apt to be engaged by a plate fixed to said block.

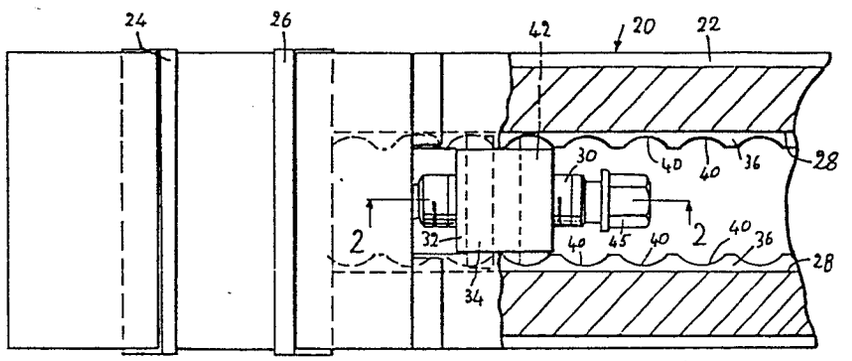

FIG.1

EP 0 184 183 A2

MODULAR VICE FOR THE QUICK DISPLACEMENT OF THE MOBILE JAW

in the name of OML s.n.c. Officina Meccanica Lombarda, Travacò Siccomario (Pavia)

DISCLOSURE OF INVENTION

The present invention refers to the modular vice for the quick displacement of the mobile jaw, where the fine lock regulation of a piece between the jaws is made by a worm-screw, supported by a block sliding along guides, which causes said mobile jaw to carry out limited axial displacements.

In the works where non-homogeneous pieces are worked by the tool-machines, that is for the little mass-production, it is necessary to handle the vice several times a day, which is fixed to the work table of the tool-machine in order to lock the pieces before starting the operation. If the pieces to be worked are homogeneous, the mobile jaw stroke is almost constant for every work cycle. On the contrary, if the pieces are not homogeneous, the strokes for locking two pieces of considerable length difference are substantially different. This involves a

lost of time which influences the inoperative period of the machine and increases the production costs. In order to overcome the above described drawback, modular vice were realized, in which there is a quick approaching of the mobile jaw to the piece to be locked and thus a fine displacement of said jaw for locking the piece. The quick displacement is realized by means of the block connected to the mobile jaw through a warm-screw. In the lower part of said block a ball is fixed, which couples with spherical notches made out along the longitudinal axis of the vice basis. When the ball is positioned in the desired notch, the operator, handling the warm-screw, executes the locking of the piece to be worked, between the mobile jaw and the fixed one. Thus the work table on which the vice is fixed, moves toward the tool of the machine. During the working of the pieces it may occur a stumbling of the tool against the piece, which is steadily pressed against the said tool of the work table. A force is thus created which is opposed to the displacement direction of the work table. Said force acts in a direction opposite to the one exercised by the mobile jaw on the piece, and that may cause the coming out of the ball, fixed to the block, from the spherical notch in which it was positioned. In this way the block and consequently the mobile jaw move and the piece, no more locked, falls. Another drawback of the vices of this known type consists in the fact that it is necessary an almost great space between two consecutive notches, made out on the basis of the vice, in

order to avoid a damage of their contour due to an anomalous force. For this reason the number of modular displacements of the block is limited. For overcoming the above exposed drawbacks, vices were realized, having a series of holes made out on the basis of the vice, in which a pin is engaged which fixes the block connected, in a known way, to the mobile jaw. When a displacement of the block must be executed, it is necessary to take the pin out of the hole, to position the block in the new seat and to put the pin into the correspondent hole for the locking of said block. As it is easily understanding, the displacement of the mobile jaw does not take place quickly (taking in account the time for taking out the pin, for positioning the block in proximity of a new hole, for engaging the pin again). Therefore the utility of having a modular vice with quick displacements of the mobile jaw is lacking. It is the purpose of the present invention to overcome the above described drawbacks.

The technical problem to be solved was that of realizing a modular vice with quick displacements of the mobile jaw in such a way that no force, due to the stumbling of the tool against the piece, causes the displacement of the block connected to the mobile jaw and that the positioning of said block takes place in a simple and quick way.

The solution of the technical problem is characterized by the fact that said block is quickly displaceable

along said guides in the lower part of which opposite constant pitch seats, means being provided for engaging said seats and locking said block in the desired position.

Further characteristics and advantages will be more apparent from the following description and from the enclosed drawing in which:

Fig. 1 is a plan view of the vice object of the present invention,
Fig. 2 is a section view according to the line 2-2 of Fig. 1 and
Fig. 3 is a lateral view of the vice.

With reference to Fig. 1 it is generally indicated with 20 a vice formed by a basis 22 to which the fixed jaw 24 is solidly connected. A mobile jaw 26 is displaceable along the opposite guides 28, made out on the basis 22, by means of a worm-screw 30 supported by a block 32.

The connection jaw 26 - screw 30 is not illustrated in detail as it is known in the art and does not form the object of the present invention.

The block 22 is sliding along the guides 28 and guided along them by a pin 34 (Figs. 1, 2 and 3).

In the lower part 36 of the guides 28 opposite constant

pitch arch-shaped seats 40, apt to be engaged by a plate 42, fixed to the block 32 (Figures 1 and 2) and parallel to the axis of the pin 34. Said plate 42 is substantially of rectangular shape and the shorter sides are shaped in such a way that they have the shape of half of the circle corresponding to the seats 40 so that it is easily positioned in said seats 40 as it will be afterwards explained.

When the mobile jaw 26 has to be quickly displaced, the end 45 of the warm-screw 30 is raised in the direction of the arrow 47 (Fig. 2); in this way the block 32 makes a little anticlockwise rotation. By this rotation the plate 42 is raised and does not engage the seat 40. The block 32 is, in this way, free and may be quickly displaced along the vice axis. As a consequence, the mobile jaw 26 is displaced. When said jaw 26 arrives in proximity of the piece to be locked, the end 45 of the warm-screw 30 is released and the plate 42 accommodates the shorter sides into the opposite seats 40 in such a way that the block is locked in the desired position. Operating the worm-screw 30, the mobile jaw approaches the piece until it locks against the fixed jaw 24. The particular shape of the shorter sides of the plate 42 prevents this last and thus the block 32 from moving when said plate 42 is positioned in the opposite arch-shaped seats 40, even in the case of a stumbling of the tool against the piece and of a considerable increase of the generated force.

Claims:

1. Modular vice for the quick displacement of the mobile jaw where the fine regulation for the locking of a piece between the jaws is executed by a warm-screw, supported by a block sliding along guides, for causing said mobile jaw to carry out limited axial displacement, characterized by the fact that said block is quickly displaceable along said guides in the lower part of which opposite constant pitch seats, means being provided for engaging said seats and locking said block in the desired position.

2. Modular vice according to claim 1, characterized by the fact that said means are formed by a plate of substantially rectangular shape fixed to said block, the shorter sides of said plate being shaped in such a way that they result to be the half of said seats.

3. Modular vice according to claim 1 and 2, characterized by the fact that said seats are circle-arch shaped so that said plate is easily positioned in said seats.

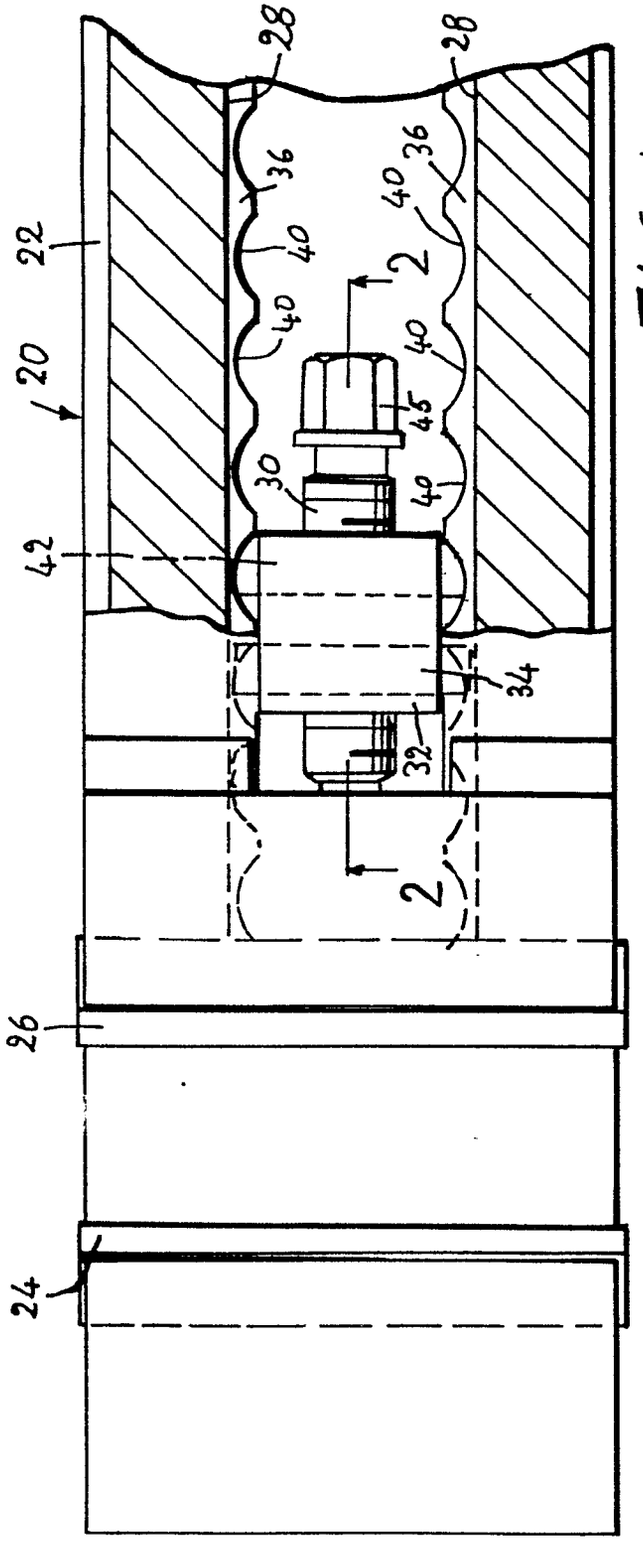

FIG.1

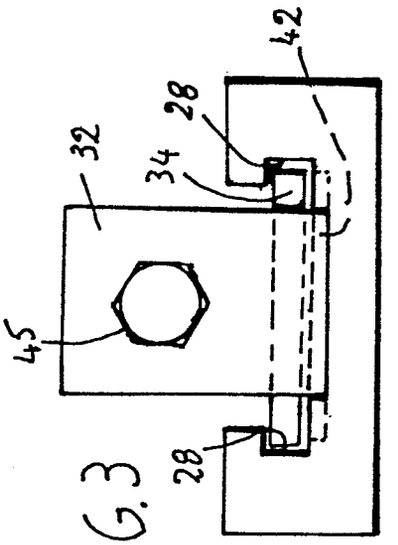

FIG.3

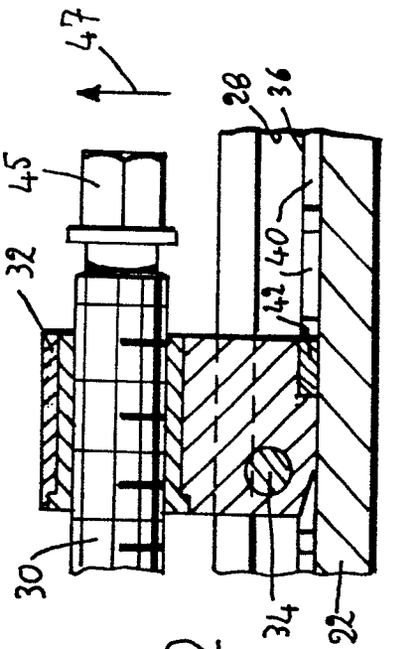

FIG.2