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(54) **Die for machining extruded profiles**

(57) Die (11) for machining extruded profiles, especially aluminium profiles, and similar, the work whereof is carried out using dollies (1) dimensioned according to profiles and hole punches for the machining, and comprises a runner (2) which can be placed and fixed longitudinally against the dolly and a guide box (6) which is mounted in the die and which has an opening through its section which coincides with that of the runner, the dolly and the runner, having no transverse play between them, but with the possibility of relative axial movement, being tightly inserted through the box; the runner whereof is fixed to the guide box, in a selected axial position, using a positioning pin (12).

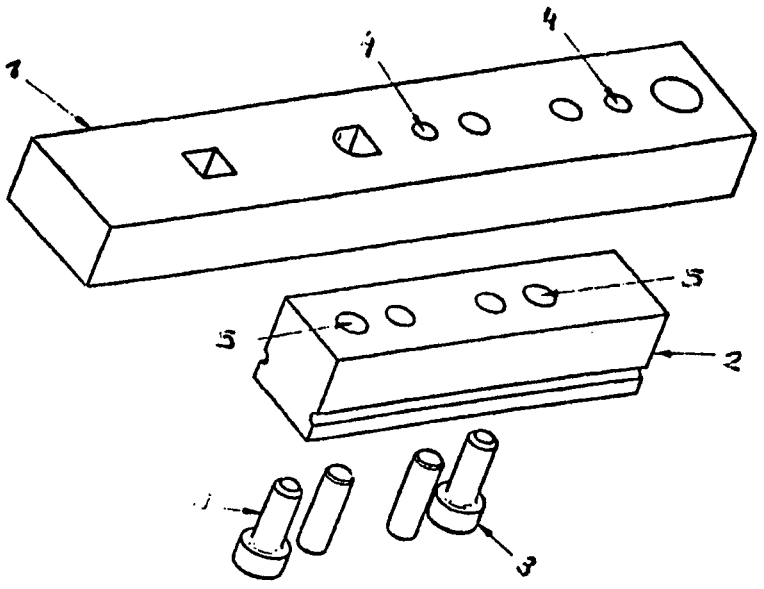

Figure 1

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Description

Field of the invention

[0001] The present invention relates to a die for machining profiles, especially aluminium profiles, and similar, the work whereof is carried out using a box with its guide, in addition to various dimensioned dollies, depending on the profile to be machined and hole punches for the machining thereof.

[0002] The novelty consists in that this working method allows a quick and easy interchange of the dollies needed for each series of profiles to be machined.

Background of the invention

[0003] The dies traditionally used for machining aluminium carpentry and other materials comprise different hole punches, guides or tracks, each of which carry out one or various operations on the profiles that make up a series.

[0004] The problem currently presented by these dies is that before any modification or extension of the profile in a series can be carried out by the system operators, the dies quickly become obsolete, and it was the manufacturer thereof that had to modify said die, regauging it to adjust it to the new modifications. In addition, this leads to the manufacture of dies of a considerable size.

Description of the invention

[0005] The purpose of the present invention is to incorporate a guide or dolly and its respective support into a die, for a quick and reliable change, which allows any possible changes needed to be done simply and so that the users of the dies can themselves replace the new parts, quickly and easily, without the need for costly adjustments or complicated machining, with complex tolerances.

[0006] The die of the invention is characterised in that it incorporates a runner which can be placed and fixed longitudinally against the dolly and a guide box which is mounted in the die, through which the dolly with its runner will be tightly inserted.

[0007] The runner is fixed to the dolly so that there can be no movement between the two in any direction. For this, the runner and dolly may have facing holes, duly threaded, so that they can be fixed together using screws, pins or other joining elements.

[0008] The guide box which is mounted in the die has an opening through its section which coincides with that of the runner, so that said runner is mounted using this opening so that there is no transverse play between the two, but so that one can be moved in relation to the other.

[0009] This system ensures that the part remains perfectly secured in the axes (X, Y, Z). The runner is then fixed to the guide box, in a selected axial position, using a positioning pin, which also ensures that the part has no room for movement in the Y axis. In this way, a perfect fastening is achieved and the risk of any play or movement in the X, Z and Y axes is eliminated.

[0010] This system prevents there being any type of play, which is what happened in the traditional systems if they were not gauged correctly, an operation which required the intervention of more experienced personnel.

[0011] Provision of the assembly, with the dolly and runner in the form presented and with the die prepared with the guide box, allows us to add to or modify it as many times as required without the need for adjustment, gauging or preparation of the die by the manufacturer thereof, but which can be done by any user, without any specific resources or mechanical knowledge, allowing said operation to be carried out simply and easily, since the adjustment between dolly and runner, and also between these components and the guide box, is ensured.

[0012] The guide box consists of an approximately straight prismatic part which has, starting from its upper base, a channel running between two of the opposite walls, this channel having a section which is approximately the same as the guide. The channel will be used to carry, along its walls, elements which roll against those that will tightly support the facing surfaces of the runner, without there being any risk of play between them.

[0013] The rolling elements consist of two rows of balls which can rotate freely, mounted along the walls of the channel, protruding slightly from the surfaces of said walls. Along each of its walls facing the channel, the runner will have grooves, the dimension and position whereof coincide with the protruding portion of the balls.

[0014] As far as the positioning element, used to set the position on the guide box, is concerned, it can be composed of a screw which is screwed into a threaded drill hole in the die, this screw coming into contact with the dolly, once its axial position on the guide box has been selected.

Brief description of the drawings

[0015] The way in which the invention is set up, together with its characteristics, is explained below in greater detail, with the assistance of the attached drawings, wherein a non-restrictive embodiment is shown.

[0016] In the drawings:

Figure 1	shows a perspective view of the dolly and runner which can be placed and fixed against it, in a position prior to being joined.
Figure 2	is a similar perspective view wherein the dolly and runner are shown placed together and joined.
Figure 3	shows the mounted assembly of the dolly and runner, together with the guide box which will be mounted in the die.
Figures 4 to 7	show successive phases of the assem-

bly of the assembly in the die.

Detailed description of the operating process

[0017] Figure 1 shows a dolly 1, for the assembly of a die, against which a runner 2 is placed and fixed. This fastening can be done using screws inserted through facing holes 4 and 5 of the dolly and runner and conveniently threaded and/or using pins, or other fastening elements.

[0018] Figure 2 shows the dolly 1 and runner 2 already duly fixed using the screws 3.

[0019] Figure 3 shows the assembly of the elements used to mount the die, composed of the dolly 1 and runner 2 joined together and of a guide box 6 which will be mounted in the die and which can be composed of a body which has a longitudinal channel 7, the section whereof coincides approximately with that of the runner 2. In the opposite walls of the channel 7 are two rows of balls 8, which are partially housed or embedded in channels 9 in the walls of the runner. In each of the facing surfaces of the walls of the channel 7, the guide 2 has grooves 10 positioned and dimensioned to be tightly joined to the protruding portion of the balls 8, to ensure the fitting of the joint between the runner 2 and the guide box 6, preventing any side movement but, however, allowing the runner 2 to slide inside the box 6.

[0020] As can be seen in Figures 4 to 7, the guide box 6 is mounted in the die 11 and, once the dolly 1 and runner 2 are fixed, as shown in Figure 5, these components can be inserted by sliding them through the guide box, as shown in Figure 6. Once the relative position between runner 2 and guide box 6 has been selected, the assembly is blocked or fastened using a positioning pin 12, Figure 7, which may consist of a screw inserted through a threaded hole which exits in a position facing the dolly, so that it rests against the dolly or is inserted in a hole in said dolly, in order to block its position, with respect to the box 6.

[0021] Given the way in which the invention is set up, as explained, a perfect fastening of the part on the X and Z axes can be achieved, by means of the joint between the dolly 1 and the runner 2. Because of the coupling system between the runner 2 and the guide box 6, any room for movement in the Y axis is prevented, thus ensuring that there is no risk of play in any of the three axes, without the need to use complicated gauging operations, although modifications can be made to the parts as many times as required.

Claims

1. Die for machining profiles, the work whereof is done using dollies dimensioned in accordance with profiles and hole punches for the machining, **characterised in that** it comprises a runner which can be placed and fixed longitudinally against the dolly, so that there can be no movement between the two in any direction, and a guide box which is mounted in the die and which has an opening through its section which coincides with that of the runner, the dolly and the runner, having no transverse play between them, but with the possibility of relative axial movement, being tightly inserted through the box; the runner whereof is fixed in the guide box, in a selected axial position, using a positioning pin.

2. Die according to claim 1, **characterised in that** the dolly and runner have facing threaded holes, so that they can be fixed together using screws.

3. Die according to claim 1, **characterised in that** the guide box consists of an approximately straight prismatic part, which has, starting from its upper base, a channel running between two of the opposite walls, and has a section which is approximately the same as the guide, the channel whereof carries, along its walls, elements which roll against those that tightly support the facing surfaces of the runner.

4. Die according to claim 1, **characterised in that** the aforementioned positioning element is composed of a pin, which is housed in a drill hole which passes through the die and which comes in contact with the dolly, once its axial position is blocked in the guide box and the machinings it houses, the positioning pin then being opposite to and coinciding with the latter.

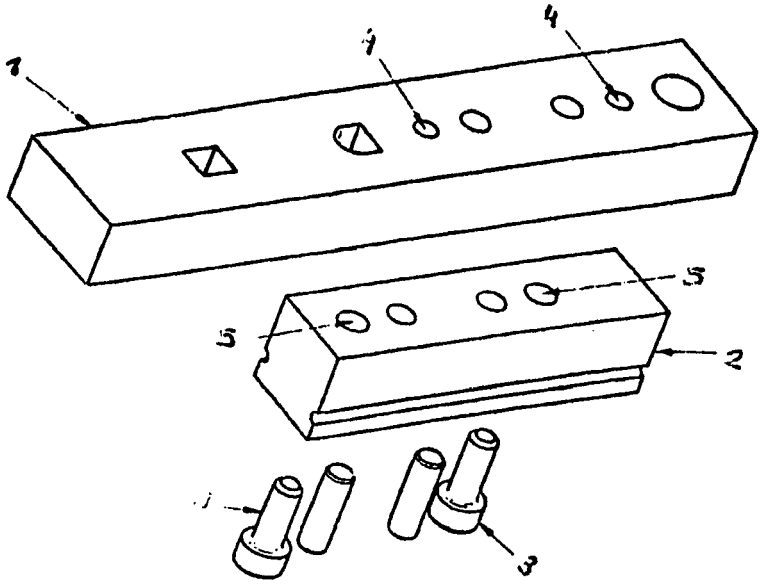

Figure 1

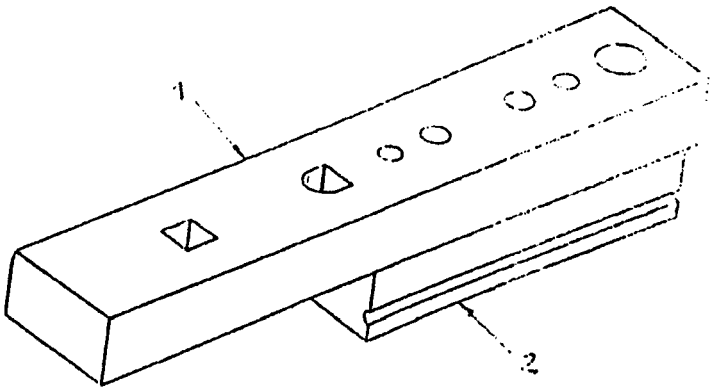

Figure 2

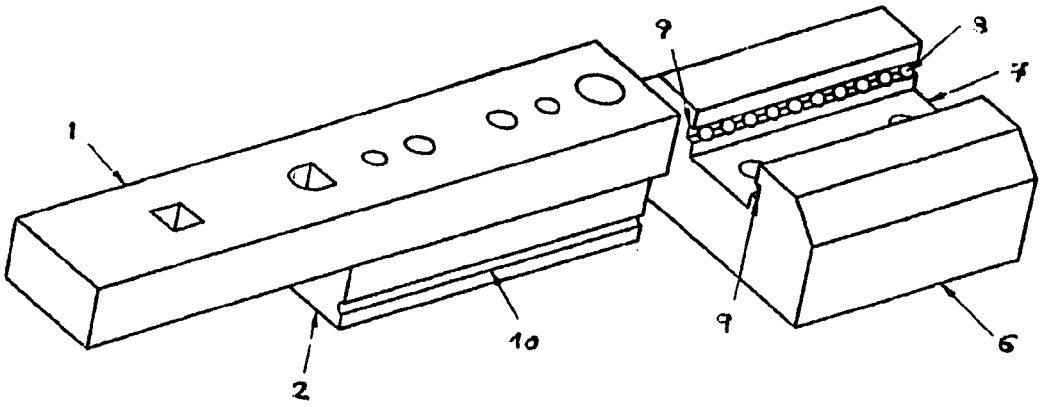

Figure 3

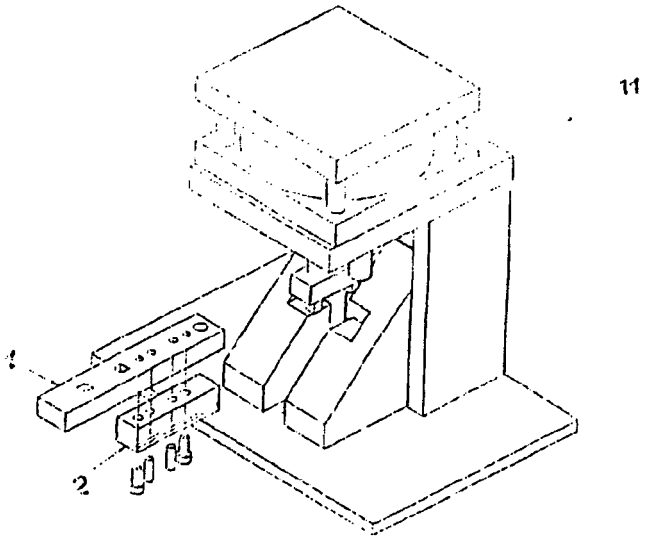

Figure 4

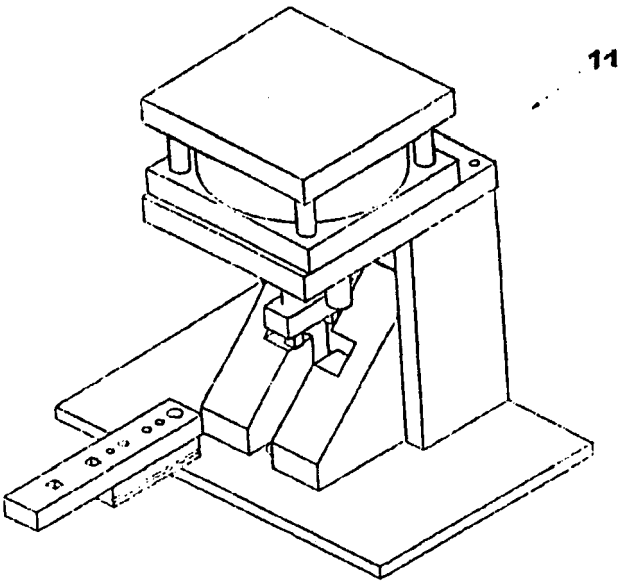

Figure 5

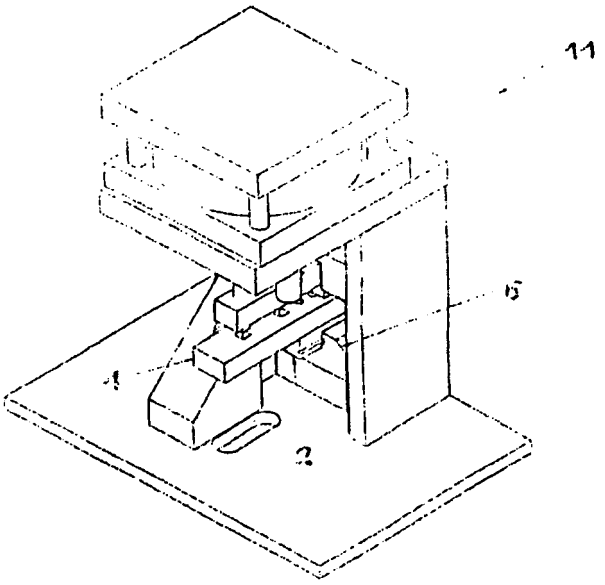

Figure 6

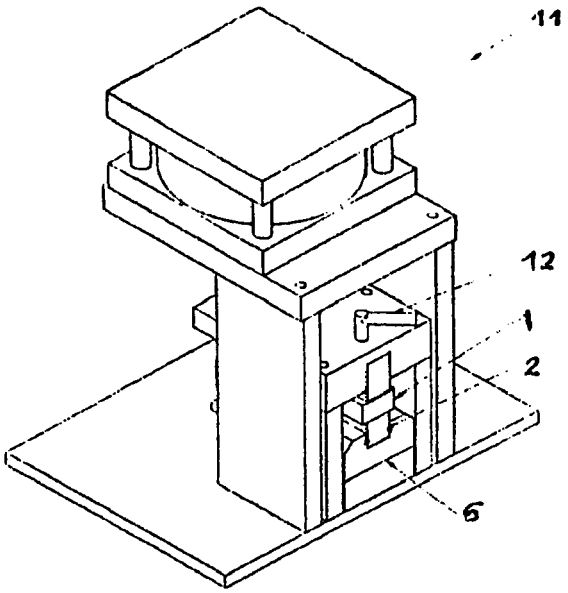

Figure 7

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EUROPEAN SEARCH REPORT

Application Number
EP 06 38 0045

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 705 658 A (BALTEC MASCHINENBAU AG) 10 April 1996 (1996-04-10) * the whole document *	1	INV. B21D28/34 B21D37/04
X	EP 0 539 314 A (BERNUS LAFUENTE, RAMON; BERNUS LAFUENTE, FRANCISCO) 28 April 1993 (1993-04-28) * the whole document *	1	
A	WO 96/27457 A (GOTHIA FAESTTEKNIK AB; NILSSON, STIG; WEDIN, STURE) 12 September 1996 (1996-09-12)		

TECHNICAL FIELDS SEARCHED (IPC)

B21D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	24 July 2006	Ris, M

CATEGORY OF CITED DOCUMENTS

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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