(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 022 611 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
11.02.2009 Bulletin 2009/07

(51) Int Cl.:
B27C 5/06 *(2006.01)* ***B27M 3/18*** *(2006.01)*
B27M 1/08 *(2006.01)*

(21) Application number: **08161766.4**

(22) Date of filing: **04.08.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

(30) Priority: **03.08.2007 IT BO20070558**

(71) Applicant: **BIESSE S.p.A.**
61100 Pesaro (IT)

(72) Inventor: **Bernardi, Paolo**
47841 Cattolica (IT)

(74) Representative: **Jorio, Paolo et al**
STUDIO TORTA
Via Viotti 9
10121 Torino (IT)

(54) Machine for working component parts of wood or similar, in particular component parts of doors and windows

(57) A machine, for working component parts (2) of wood or similar for doors and windows, has a bed (3) extending in a first direction (4); cross members (14) fitted to the bed (3) and parallel to a second direction (9) crosswise to the first direction (4); at least one clamping device (15) fitted to each cross member (14) to clamp at least one component part (2); a bridge crane (6) movable along the bed (3) in the first direction (4); a machining unit (12) and a grip-and-carry unit (21), both movable along the bridge crane (6) in the second direction (9); and a marking device (25) for marking the component part (2).

EP 2 022 611 A1

Description

[0001] The present invention relates to a machine for working component parts of wood or similar, in particular component parts of doors and windows.

[0002] In the following description, "doors and windows" is intended to mean doors, windows, and furniture doors comprising an annular frame, and a sheet, e.g. of glass, fitted inside the frame.

[0003] Door and window component parts are worked on a machine comprising an elongated bed with two longitudinal guide members parallel to a first horizontal direction; a number of cross members fitted between the longitudinal guide members and movable along the longitudinal guide members in the first direction; at least one clamping device fitted to each cross member to clamp at least one component part; and a bridge crane movable in the first direction along the bed.

[0004] The bridge crane comprises a further cross member which extends over the bed in a second horizontal direction crosswise to the first direction, is bounded in the first direction by two opposite faces, and supports a machining unit fitted to one of the faces to machine the work, and a grip-and-carry unit fitted to the other face to transfer the work to and from the clamping device.

[0005] Though amply tried and tested, known machines of the above type for working component parts of wood or similar, in particular component parts of doors and windows, have several drawbacks, mainly due to their being relatively inflexible, and performing only a relatively small number of jobs.

[0006] It is an object of the present invention to provide a machine for working component parts of wood or similar, in particular component parts of doors and windows, designed to eliminate the above drawbacks, and which is cheap and easy to produce.

[0007] According to the present invention, there is provided a machine for working component parts of wood or similar, in particular component parts of doors and windows, as claimed in the accompanying Claims.

[0008] The present invention will be described with reference to the attached drawing, which shows a plan view and enlarged detail of a non-limiting embodiment.

[0009] Number 1 in the attached drawing indicates as a whole a machine for working component parts 2 of wood or similar, in particular elongated, substantially parallelepiped-shaped component parts of doors and windows.

[0010] Machine 1 comprises an elongated, substantially U-shaped bed 3 extending in a horizontal direction 4 and having two lateral longitudinal guide members 5 parallel to direction 4.

[0011] Machine 1 also comprises a bridge crane 6 in turn comprising an upright 7, which is fitted in known manner to bed 3 to move linearly in direction 4 along bed 3, under the control of a known actuating device not shown, and is fitted on its free end with a cross member 8 extending over bed 3 in a horizontal direction 9 crosswise to direction 4, and bounded laterally in direction 4 by two opposite faces 10, 11.

[0012] Bridge crane 6 supports a known machining head 12 fitted to face 10, fitted in known manner to cross member 8 to move linearly along cross member 8 in direction 9, and comprising, in the example shown, at least one spindle (not shown), which is fitted in known manner to head 12 to move linearly with respect to head 12 in a vertical direction 13 perpendicular to directions 4 and 9, and is designed to receive and retain a tool or machining aggregate (not shown).

[0013] Machine 1 also comprises a store (not shown) for changing the tools and/or machining aggregates (not shown) fitted to the spindle (not shown), and which is carried by bridge crane 6 and extends along an endless path through upright 7.

[0014] Machine 1 also comprises a number of cross members 14 - hereinafter referred to as "work surfaces" - which extend between longitudinal members 5 in direction 9, and are fitted to longitudinal members 5 to move along longitudinal members 5 in direction 4, either manually or by means of respective known actuating devices not shown.

[0015] Work surfaces 14 support a number of vises 15 which are movable between a grip position and a release position to grip and release at least one component part 2, and the layout of which on work surfaces 14 substantially depends on the size of and the work to be carried out on component parts 2.

[0016] Machine 1 also comprises a feed device 16 for feeding component parts 2, and in turn comprising a bed 17 located alongside bed 3 in direction 4 and supporting a number of belt conveyors 18, which are aligned in direction 4, extend in respective vertical planes parallel to one another and to direction 9, have respective coplanar top conveying branches, and extend in direction 9 between a loading station 19 and an unloading station 20, where the unmachined component parts 2 are loaded and unloaded on and off device 16 respectively.

[0017] Component parts 2 are transferred between feed device 16 and vises 15 by a grip-and-carry unit 21 comprising an arm 22, which projects in direction 4 from face 11 of cross member 8, and is fitted in known manner to cross member 8 to move linearly in direction 9 along cross member 8, under the control of a known actuating device not shown.

[0018] In the example shown, arm 22 supports two grip-and-carry devices 23, 24 defined by respective grippers and fitted in known manner to arm 22 to move linearly with respect to arm 22 in direction 13. In the example shown, device 23 is fixed to arm 22 in direction 4, while device 24 is fitted in known manner to arm 22 to move linearly in direction 4 along arm 22, under the control of a known actuating device not shown.

[0019] In connection with the above, it should be pointed out that, in the example shown, loading station 19, for loading unmachined component parts 2 onto device 16, also acts as an unloading station for unloading the ma-

chined component parts 2 off grip-and-carry unit 21.

[0020] Machine 1 also comprises a marking device 25 for marking unmachined or machined component parts 2.

[0021] Device 25 comprises, for example, a printing unit or laser marker; impresses, for example, a respective identification code or the furniture maker's name on each component part 2; and, in the example shown, is fitted to bed 17 in a fixed position in directions 4, 9 and 13.

[0022] In actual use, by combining the movement of bridge crane 6 along bed 3 in direction 4 with the movement of arm 22 along cross member 8 in direction 9, and with the movement of grip-and-carry devices 23, 24 in direction 13, the unmachined or machined component part 2 is moved past and marked by device 25.

[0023] Obviously, in variations not shown :

device 25 is fitted to bed 3;
device 25 is movable in at least one of directions 4, 9 and 13; and
device 25 can be rotated about at least one axis of rotation to selectively mark different faces of component part 2, i.e. the top and bottom faces, the end faces, and the front and rear faces.

Claims

1. A machine for working component parts (2) of wood or similar, in particular component parts (2) for doors and windows, the machine comprising a bed (3) extending in a first direction (4); at least two cross members (14) extending in a second direction (9) crosswise to the first direction (4), and movable along the bed (3) in the first direction (4); at least one clamping device (15) fitted to each cross member (14) to clamp at least one component part (2); a bridge crane (6) movable along the bed (3) in the first direction (4), and comprising a further cross member (8) extending over the bed (3) in the second direction (9); at least one machining unit (12) movable along the further cross member (8) in the second direction (9) to machine the component part (2); and a grip-and-carry unit (21) movable along the further cross member (8) in the second direction (9) to transfer the component part (2) to and from the clamping devices (15); and the machine being **characterized by** also comprising a marking device (25) for marking the component part (2).

2. A machine as claimed in Claim 1, wherein the grip-and-carry unit (21) comprises at least one grip-and-carry device (23, 24) movable in a third direction (13) perpendicular to said first and said second direction (4, 9), so as to move the component part (2) past the marking device (25) by combining the movements of the grip-and-carry device (23, 24) in said first, said second, and said third direction (4, 9, 13).

3. A machine as claimed in Claim 1 or 2, wherein the marking device (25) is mounted in a fixed position in said first, said second, and said third direction (4, 9, 13).

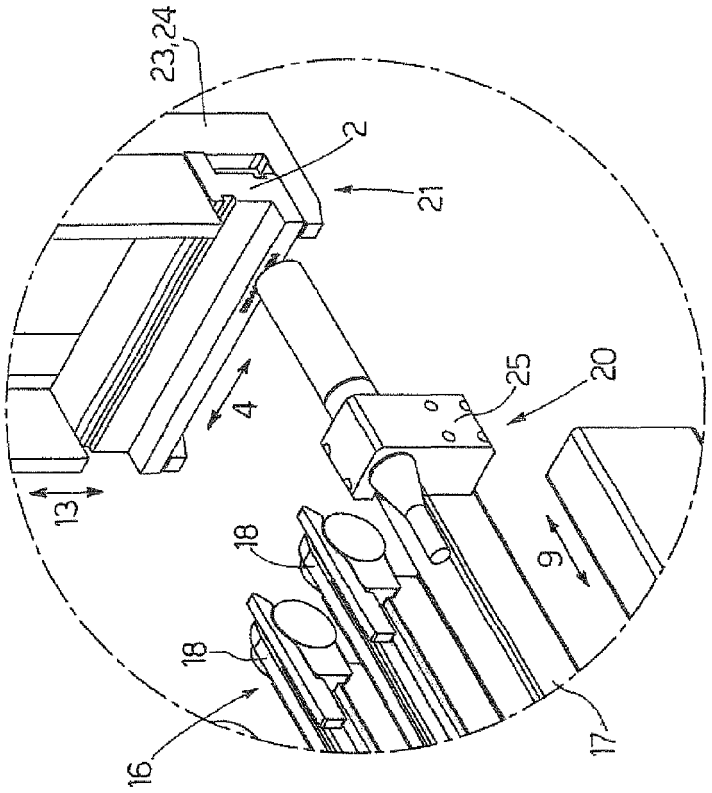
4. A machine as claimed in Claim 1 or 2, wherein the marking device (25) is movable in the first direction (4) and/or in the second direction (9) and/or in a third direction (13) perpendicular to said first and said second direction (4, 9).

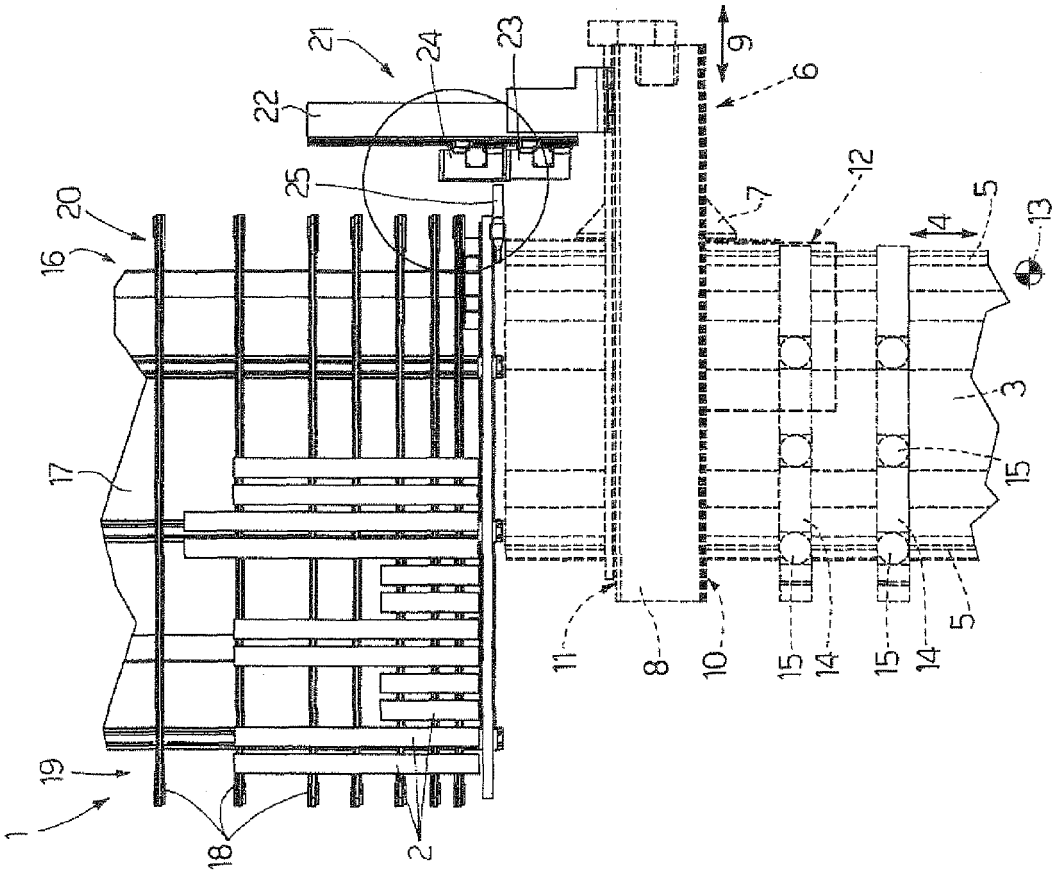
5. A machine as claimed in any one of the foregoing Claims, and also comprising at least one feed device (16) for loading and/or unloading the component parts (2) onto and/or off the grip-and-carry unit (21); the feed device (16) comprising a further bed (17), and a conveyor (18) mounted on the further bed (17).

6. A machine as claimed in Claim 5, wherein the marking device (25) is mounted on said further bed (17).

7. A machine as claimed in any one of Claims 1 to 5, wherein the marking device (25) is mounted on said bed (3).

8. A machine as claimed in any one of the foregoing Claims, wherein the marking device (25) is mounted to rotate about at least one axis of rotation to selectively mark the various faces of the component part (2).


23,24
2
21
4
25
20
13
18
9
18
16
17


21
24
23
9
6
22
25
20
16
12
7
5
14
13
3
17
15
11
8
10
15
14
15
14
5
19
1
18
2

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 08 16 1766

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	DE 198 46 819 A1 (BIESSE SPA [IT]) 13 April 2000 (2000-04-13) * abstract; figure 1 * * figure 2 * * figure 3 *	1-8	INV. B27C5/06 B27M3/18 B27M1/08
X	EP 1 810 803 A (SCM GROUP SPA [IT]) 25 July 2007 (2007-07-25) * abstract *	1-8	
X	EP 1 247 611 A (UNITEAM S P A [IT]) 9 October 2002 (2002-10-09) * abstract; figures 1-3 *	1-8	
X	DE 93 21 187 U1 (SCHMIES GMBH [DE]) 11 July 1996 (1996-07-11) * page 6, line 1 - page 7, line 14; figures *	1-8	
A	DE 103 05 570 A1 (HANS HUNDEGGER MASCHINENBAU) 15 April 2004 (2004-04-15) * paragraph [0035]; figure 1 *	1-8	TECHNICAL FIELDS SEARCHED (IPC)
A	US 5 724 246 A (HEIL EDWIN DEAN [US]) 3 March 1998 (1998-03-03) * abstract; figures 1-14 *	1-8	B27C B27M B23Q B27F B27B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 November 2008	Meritano, Luciano

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

1 EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 16 1766

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-11-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19846819 A1	13-04-2000	NONE	
EP 1810803 A	25-07-2007	NONE	
EP 1247611 A	09-10-2002	AT 268667 T	15-06-2004
		DE 60200601 D1	15-07-2004
		US 2003026672 A1	06-02-2003
DE 9321187 U1	11-07-1996	NONE	
DE 10305570 A1	15-04-2004	NONE	
US 5724246 A	03-03-1998	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82