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(54) Apparatus for the manufacture of concrete columns.

(57) An apparatus for manufacturing concrete columns, having a concrete-gunning unit (1) and a column-grinding unit (2) , the gunning unit having a gun (4) moving along a vertical boom (3) and a grinding disc (5), by means of which a concrete column is manufactured by gunning a concrete mix against a specific blank rotating about its axis (6), whereafter the hardened column is transferred to the grinding unit (2), where the surface of the concrete column is ground and polished by means of a second grinding device (8), moving along a vertical boom (7). Both the gunning unit and the grinding unit have tilting devices (9, 10) by means of which the vertical booms (3, 7) can be tilted relative to the axis (11) of the concrete column so that conical columns are produced.

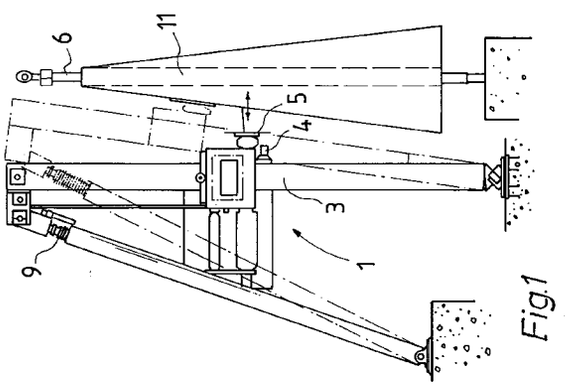

Fig.1

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The present invention relates to an apparatus for the manufacture of concrete columns, the apparatus having a concrete-gunning unit and a column-grinding unit, the gunning unit having a gun moving along a vertical boom and a grinding disc, by means of which a concrete column is manufactured by gunning a concrete mix against a specific blank turning about its axis, whereafter the hardened column is transferred to the grinding unit, where the surface of the concrete column is ground and polished by means of a second grinding device moving on a vertical boom.

The apparatus is used for manufacturing concrete columns by a concrete-gunning method known per se, described in a number of previous patent applications. After the gunning the fresh concrete is cut and ground straight by means of a rotating tool. Concreting completed, the fresh element is transferred, supported by its jig, to the hardening site. When the element has hardened, it is detached from the jig or is lifted into a grinding apparatus, in which it fits without centering, since the apparatus has the same rotating and supporting devices. The surface of the element is ground down by about 2-4 mm, for example with a diamond tool, whereby the aggregate is exposed, whereafter the element is ground smooth by using polishing tools. All the methods described above are known per se. The manufacturing apparatus according to the invention is characterized in that both the gunning unit and the grinding unit have tilting devices by means of which the vertical booms can be tilted relative to the axis of the concrete column so that conical columns are produced. By tilting the vertical booms of the fresh-working and dry-working tools, a conical column can be produced as easily as can a straight one. The saving in forms is emphasized in the conical column, since the making of a conical form is expensive, and all that is needed in the apparatus according to the invention is control of the travel direction of the moving devices. The actual gun has distance control which enables the distance of the nozzles from the element to be maintained unchanged even though the element narrows towards the upper end. The inner block of the concrete column is of thin metal sheet and the steel reinforcement is conical. The invention is described below in the form of an example, with reference to the accompanying drawing, in which Figure 1 depicts the gunning unit in the apparatus for manufacturing concrete columns, and

Figure 2 depicts the grinding unit in the manufacturing apparatus.

The apparatus for manufacturing concrete columns has a concrete-gunning unit 1 and a column-grinding unit 2. The gunning unit has a gun 4, moving along a vertical boom 3, and a grinding disc 5. The gun-4 and the grinding disc 5 are located adjacently and can be moved in the lateral direction for the steps required. The concrete mix is sprayed through the nozzle of the gun against a blank rotating about its axis 6, whereby a concrete column narrowing conically upwards is produced. Thereafter, the surface of the column is smoothed by means of the grinding disc 5. When the concrete column has hardened, it is transferred to the grinding unit, where the surface of'the concrete column is ground and polished by means of a second grinding device 8 moving along a vertical boom 7 in the grinding unit. Both the gunning unit 1 and the grinding unit 2 have tilting devices 9, 10, by means of which the vertical booms can be tilted relative to the axis 11 of the concrete column so that conical columns are produced. The tilts are indicated with dot-dashed lines. Concrete columns manufactured in an apparatus according to the invention can be used for construction purposes as various vertical columns or even by combining cones to each other to produce angular components of a desired shape.

Claims

1. An apparatus for manufacturing concrete columns, having a concrete-gunning unit (1) and a column-grinding unit (2), the gunning unit having a gun (4) moving along a vertical boom (3) and a grinding disc (5), by means of which a concrete column is manufactured by gunning a concrete mix against a specific blank rotating about its axis (6), whereafter the hardened column is transferred to the grinding unit (2), where the surface of the concrete column is ground and polished by means of a second grinding device (8), moving along a vertical boom (7), **characterized** in that both the gunning unit and the grinding unit have tilting devices (9, 10) by means of which the vertical booms (3, 7) can be tilted relative to the axis (11) of the concrete column so that conical columns are produced.

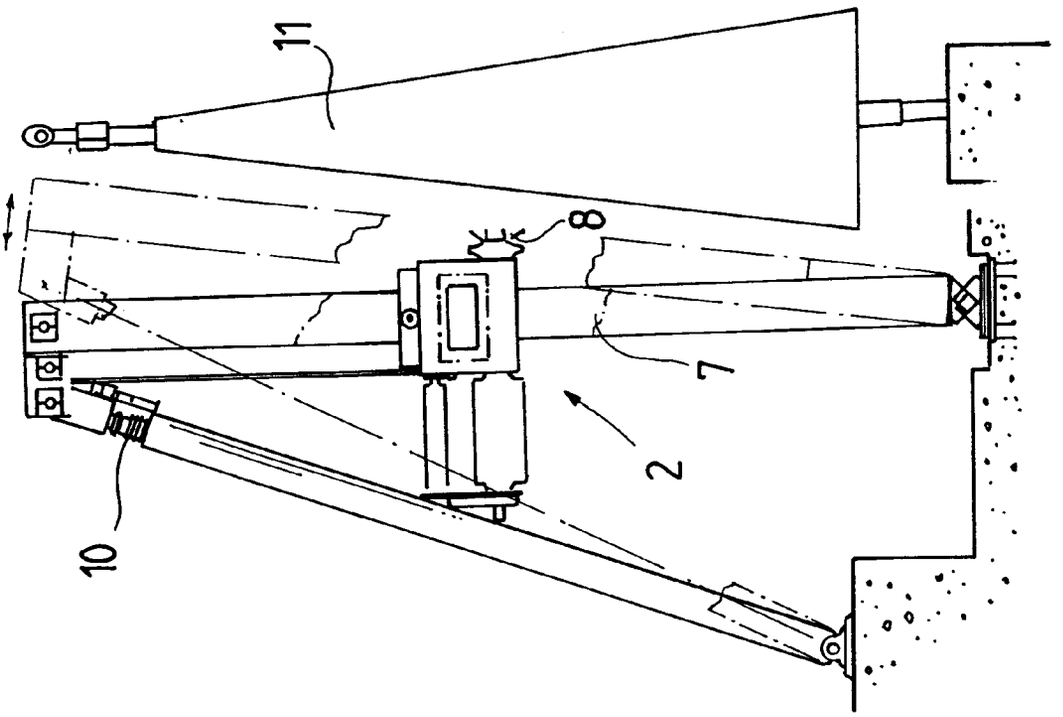

Fig.2

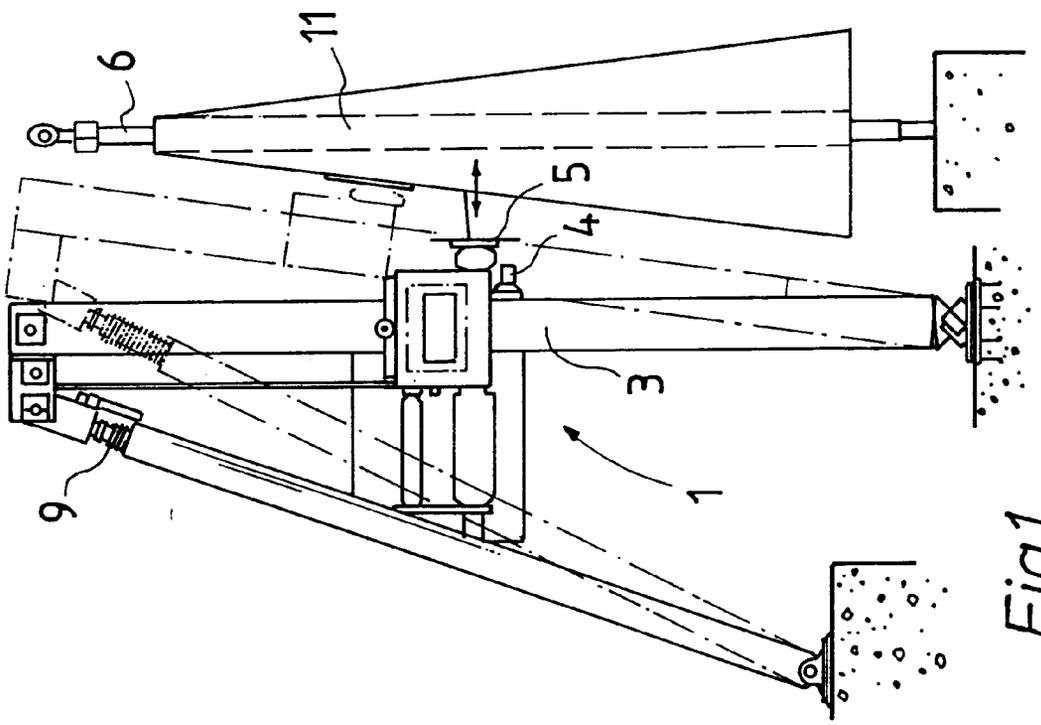

Fig.1

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EUROPEAN SEARCH REPORT

Application Number
EP 93 85 0032

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	EP-A-0 340 185 (BETEMI OY) * figure 1 *	1	B28B1/32 B28B11/08 B24B5/14
Y,P	EP-A-0 490 856 (BETEMI OY) * figures 5-8 *	1	
Y	LU-A-85 372 (A. GRAEVENITZ) * page 5, line 4 - page 5, line 14; figure 1 *	1	
Y	EP-A-0 311 145 (W. NOHLEN) * the whole document *	1	
Y	GB-A-276 737 (F. C. COWBURN) * the whole document *	1	
Y	US-A-2 669 073 (M. S. BENDICKSON) * the whole document *	1	
Y	DE-A-2 243 933 (FA. HEINRICH SCHÄFER) * the whole document *	1	
A	EP-A-0 440 591 (LOHJA BETONILA OY) * the whole document *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.5) B28B B24B
A	US-A-3 119 164 (Z. L. CSERNY) * the whole document *	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	04 MAY 1993	GOURIER P.A.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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