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

(11) EP 1 174 557 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
23.01.2002 Bulletin 2002/04

(51) Int Cl.[7]: **E04C 1/39**

(21) Application number: **01202650.6**

(22) Date of filing: **10.07.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **21.07.2000 NL 1015779**

(71) Applicant: **SLEGTEN, Jacobus Hermanus Joseph**
NL-8131 BB Wijhe (NL)

(72) Inventor: **SLEGTEN, Jacobus Hermanus Joseph**
NL-8131 BB Wijhe (NL)

(74) Representative: **'t Jong, Bastiaan Jacob et al**
Arnold & Siedsma, Advocaten en Octrooigemachtigden, Sweelinckplein 1
2517 GK Den Haag (NL)

(54) Method for erecting a building and building element

(57) The invention relates to a method for erecting a building, comprising of providing a foundation, erecting walls, floors and a roof on the foundation, arranging conduits in at least one wall and connecting the conduits to collecting lines, wherein a number of substantially vertical ducts are formed in the wall which extend to an end as seen in vertical direction of the wall, the conduits are received in the vertical ducts and the conduits are connected to the collecting lines at the end of the wall.

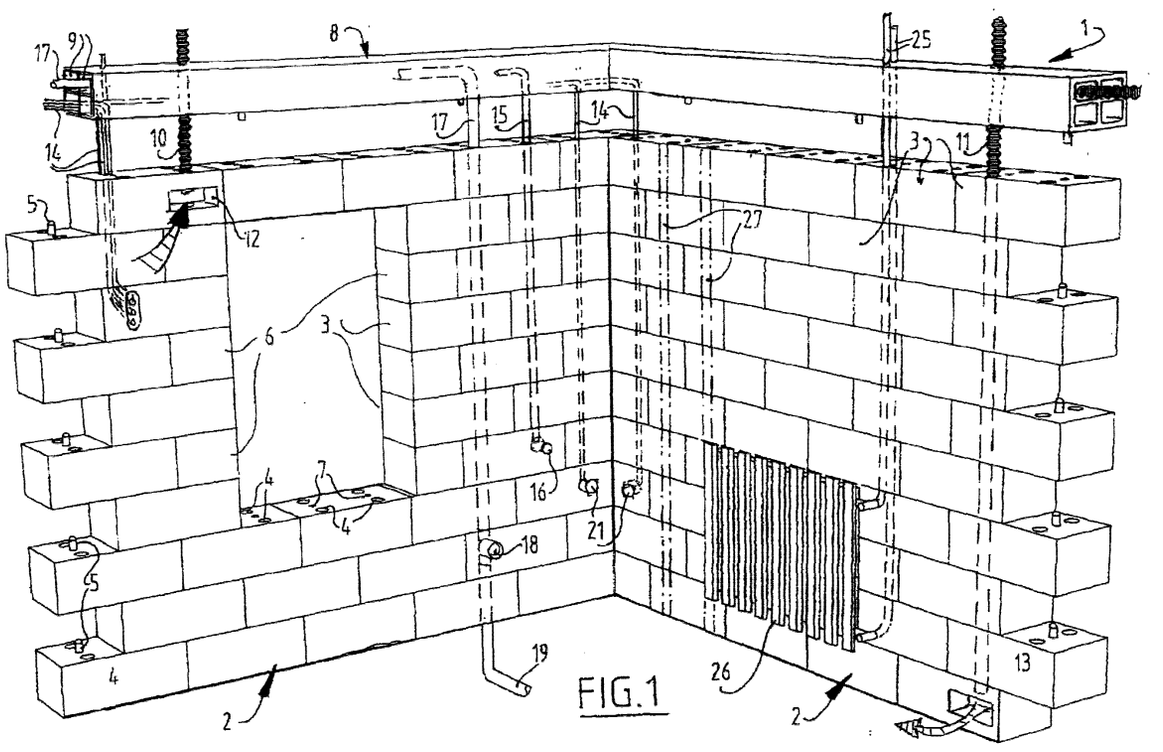

FIG.1

EP 1 174 557 A1

Description

[0001] The invention relates to a method for erecting a building, comprising of providing a foundation, erecting walls, floors and a roof on the foundation, arranging conduits in at least one wall and connecting the conduits to collecting lines.

[0002] There are many different types of conduit applied in buildings nowadays. For instance electricity lines, water conduits, discharge pipes for waste water, cables for a central antenna system, computer network conduits and heating pipes, such as central heating water feed and discharge conduits or air feed and discharge conduits. Arranging of these conduits in the walls is generally laborious and time-consuming work. Channels usually have to be cut into which channel parts, such as conduit pipes, are placed, whereafter the channels are closed again.

[0003] It is also known, particularly in the case of prefabricated walls, to include duct parts in a wall when this wall is manufactured. After erection of the wall in place, additional duct parts are however usually still required for connecting the conduits in the duct parts to collecting lines.

[0004] The invention has for its object to provide a method of the type described in the preamble which does not have these drawbacks and wherein conduits can be arranged quickly and easily.

[0005] This objective is achieved with the method according to the invention as characterized in claim 1. After erection of the walls, floors and the roof, no or practically no additional operations hereby need be carried out to arrange the conduits. Cross connections between ducts are unnecessary, since all connections are made on the vertical end of the wall.

[0006] The measure of claim 2 is preferably applied. The method according to the invention can hereby be applied in practically any design of the building. Any wall in which the block-shaped building elements are applied will automatically obtain the required ducts.

[0007] A further suitable embodiment is characterized in claim 3. A large number of the collecting lines can be arranged in the collector duct, optionally in separate compartments thereof.

[0008] The invention also relates to and provides a building manufactured with the method according to the invention. This building according to the invention is characterized in claim 4.

[0009] The invention likewise relates to and provides a building element for applying the method and for application in the building according to the invention.

[0010] According to the invention this building element has an upper surface and a lower surface and at least one duct part which extends from the lower surface to the upper surface. The building elements are placed one on top of another in the wall such that the continuous duct parts are mutually connecting and thus form the ducts in the wall.

[0011] The duct part is preferably situated at a quarter of the length of the building element. The building elements can thus be arranged in a half-brick bond and the duct parts will be able to connect to each other. It is possible to suffice with a single duct part, wherein building elements situated on top of each other are then rotated a half turn in each case relative to each other.

[0012] A preferred embodiment is characterized in claim 9. Two ducts are formed per length of a building element by stacking these building elements in a half-brick bond.

[0013] According to a further development four duct parts are arranged in this manner. These can be distributed in suitable manner such that for instance two ducts are formed on the one side of the wall and two ducts on the other side of the wall.

[0014] According to a favourable further development the measure of claim 11 is applied. It is thus possible to determine in simple manner where the ducts are situated in the erected wall and socket outlets and/or air outlet openings can for instance be readily connected to the ducts.

[0015] The building element according to the invention can very suitably be manufactured from gas concrete. This has a high insulating value, so that the conduits received in the ducts are properly insulated. This is particularly important for heating conduits, such as air or water heating pipes and also for tap water pipes, in order to prevent freezing thereof if they are arranged in an outside wall.

[0016] The invention is further elucidated in the following description with reference to the annexed figures.

[0017] Figure 1 shows a partly perspective view of a building manufactured with the method according to the invention.

[0018] Figure 2 shows a building element applied in the building of figure 1.

[0019] Figure 3 likewise shows a building element applied in the building of figure 1.

[0020] Shown in figure 1 are two walls 2 of a building 1 erected with the method according to the invention. Walls 2 are erected in the usual manner on a foundation (not further shown) and building 1 further comprises floors and a roof, which are not shown either. The shown part of the building is adequate for elucidation of the invention.

[0021] As shown in figure 1, there are formed in walls 2 a number of vertical ducts which extend from the bottom of the walls to the top. In these vertical channels are received conduits which are required in a building in the usual manner. These conduits are for instance heating air feed and discharge conduits 11,10, electrical lines 14, water conduits 15, a waste water discharge pipe 17 and the like. These conduits are received in the vertical ducts and in this case connected at the upper end of walls 2 to collecting lines which can extend in horizontal direction. The collecting lines are here received in a col-

lector duct 8, which is provided with a number of compartments 9 for receiving conduits of different types. Electricity lines 14 will thus have to be accommodated in a different compartment than a water conduit 15. Instead of in a collector duct, the collecting lines can be accommodated behind a removable knee wall in the attic at the position of the wall plate and in a horizontal tube recessed into the upper gable at the position of this wall plate.

[0022] In the context of this description "collecting line" is understood to mean a conduit which extends transversely of the longitudinal direction of the ducts in walls 2 and which is connected to one or more of the conduits in these ducts. It will be apparent that for instance the electricity lines, which may extend from wall socket outlets 20,21 arranged in walls 2 into collector duct 8, can be connected in each case in a compartment 9 of this collector duct 8.

[0023] In the preferred embodiment shown here the walls 2 are constructed from building elements 3,6 which are dry-stacked onto each other. It is noted that other building systems can also be applied in combination with the invention. A dry stacking system, and then one in particular wherein building elements 3,6 lying one on top of another are aligned relative to each other by means of dowels 5, is however recommended since it is hereby possible to achieve in simple manner that the duct parts 4 of building elements 3,6 lying one above another come to lie in one line and thus form the vertical ducts in walls 2.

[0024] Applied in this building system, as noted, are dowels 5 which are partly received in openings 7 in the upper surface 8 of the building elements and partly in corresponding openings (not shown) in the lower surface of the building elements lying thereon. Dowels 5 ensure that the building elements can be placed onto one another in one predetermined position, in which position the duct parts 4 form the vertical ducts in the wall.

[0025] As shown in figure 2, the duct parts 4, of which the building element shown here comprises four, are each arranged at a quarter of the length of building element 3. This is also the case for the openings 7 for dowels 5. Thus is achieved that a half-brick bond can be realized when the building elements are stacked. Building element 6 of figure 3 is herein desired for the formation of straight wall ends, as for instance in the drawn window opening, but of course also at free ends of the walls.

[0026] Owing to the embodiment of building element 3 as shown in figure 2, four ducts for receiving conduits are formed per length of building element 3. Two of these ducts are situated close to the one side of the wall and two others close to the other side. It is thus possible, if the formed wall is a partition wall between two spaces, to provide the desired services, such as the electricity supply and the like, in each space.

[0027] In order to make these services accessible, openings must of course be formed in the wall which give access to the ducts in which the conduits are accommodated. These openings can further be provided with for instance junction boxes 20,21 in which wall sockets, switches and the like can in turn be mounted in the usual manner. The same applies for a water conduit 15, on which can be arranged a coupling 16 on which for instance a tap can be fitted. Discharge conduit 17 for waste water is carried through wall 2 with a connection 18 to which for instance the outlet of a washbasin can be connected.

[0028] As shown in the case of discharge conduit 17, the conduits can also be extended as far as the vertical bottom end of walls 2, and collector ducts for collecting lines can be situated at the bottom end of the walls. Conduit 17 can then for instance be connected to a collecting line 19 situated under the building.

[0029] In addition to the usual electricity and water conduits, the ducts in the walls can also be used in suitable manner to receive therein central heating pipes. These can be central heating water pipes 25 connected to a central heating convector 26 in order to heat the relevant space in suitable manner. Central heating pipes 25 can be connected to collecting lines in collector duct 8.

[0030] The ducts are moreover suitable for receiving therein of heating air conduits, such as for instance a hot air feed conduit 11 and an air discharge conduit 10. Hot air feed conduit 11 extends right to the bottom of wall 2 and debouches in an air outlet opening 13 formed in the wall. The relevant building element can already be provided with opening 13 in a workplace, so that it can be quickly arranged and connected in place. The same applies for the building element provided with an air extraction opening 12, which is connected to air extraction conduit 10.

[0031] Due to the large number of available ducts a relatively large number of air feed and discharge conduits can be applied in very simple manner, so that even for conduits with a diameter which is small for air heating installations a sufficient heat transport, for instance for a house, can still be achieved. Air conduits 10,11 can suitably also be connected to collecting lines in collector duct 8.

[0032] It will be apparent that in the erection of a building according to the invention not all ducts will immediately be provided with conduits. It is readily possible to arrange additional conduits at a later time. It is only necessary to drill an opening in the wall which connects to an empty duct. Via this opening and the duct a conduit can then be pulled in simple manner to the collecting line at the upper end or lower end of the wall. This work can be carried out very quickly and therefore does not require cutting and breaking work. Only a connecting opening to the duct need be drilled.

[0033] If additional conduits still have to be arranged at the construction stage, it is possible to determine in simple manner where ducts 4 run by means of markings arranged on the building elements in the form of centre

lines 27. For the sake of clarity these are not indicated on the entire wall but only on a part thereof. These centre lines can be applied directly to the building elements, and in the assembled situation of the wall will thus form continuous lines which indicate the position of the ducts.

[0034] At a later stage, i.e. after the walls have been finished with for instance a plaster layer, these markings 27 will of course no longer be visible. In order to still allow connections to the ducts to be made at the correct position, documentation can be made consisting of photographs of the walls before the finish is applied and wherein a measuring rod or the like is simultaneously also photographed, so that later it is possible to determine in simple manner where the ducts are situated on the basis of these photographs and a measuring rod.

[0035] The building elements are favourably of gas concrete. Gas concrete has a high insulating value so that the ducts in walls 2 are insulated ducts. This is particularly advantageous when fluids at high temperatures flow through these ducts, such as pipes with hot central heating water and/or conduits with heating air. An additional insulating jacket is hereby unnecessary, so that the full cross-section of the ducts can be used effectively.

[0036] The building erected using the method according to the invention can therefore be built economically, since the installation work can be greatly limited. It is furthermore prepared for future additional conduits, such as for a central vacuum cleaner system, alarm system, data-lines, central antenna system conduits and the like.

Claims

1. Method for erecting a building, comprising of providing a foundation, erecting walls, floors and a roof on the foundation, arranging conduits in at least one wall and connecting the conduits to collecting lines, wherein a number of substantially vertical ducts are formed in the wall which extend to an end as seen in vertical direction of the wall, the conduits are received in the vertical ducts and the conduits are connected to the collecting lines at the end of the wall.

2. Method as claimed in claim 1, wherein the walls are constructed from block-shaped building elements which are provided with continuous duct parts, and the ducts are formed by placing the building elements onto one another such that the duct parts of building elements placed onto one another are mutually in register.

3. Method as claimed in claim 1 or 2, wherein a collector duct for the collecting lines is formed on the upper end of the wall.

4. Building erected using the method as claimed in any of the foregoing claims, comprising a foundation, walls, floors and a roof, wherein a number of substantially vertical ducts are formed in at least one wall which extend to an end as seen in vertical direction of the wall and in which are received conduits which are connected to collecting lines on the vertical end of the wall.

5. Building as claimed in claim 4, wherein the wall is constructed from block-shaped building elements which are provided with continuous duct parts, and the ducts are formed in that the duct parts of building elements placed onto one another are mutually in register.

6. Building as claimed in claim 4 or 5, wherein a collector duct for the collecting lines is formed on the upper end of the wall.

7. Building element for a building as claimed in any of the claims 4-6, wherein the building element has the shape of a block with a length, an upper surface and a lower surface, and at least one continuous duct part extends from the lower surface to the upper surface.

8. Building element as claimed in claim 7, wherein the duct part is situated at a quarter of the length.

9. Building element as claimed in claim 8, comprising at least two duct parts mirror-symmetrically relative to a plane transversely of the length and halfway along the length.

10. Building element as claimed in claim 9, wherein four duct parts are arranged.

11. Building element as claimed in any of the claims 7-9, wherein a side surface finally visible in a wall is provided with a marking at the position of each duct part.

12. Building element as claimed in any of the claims 7-11, wherein it is manufactured from gas concrete.

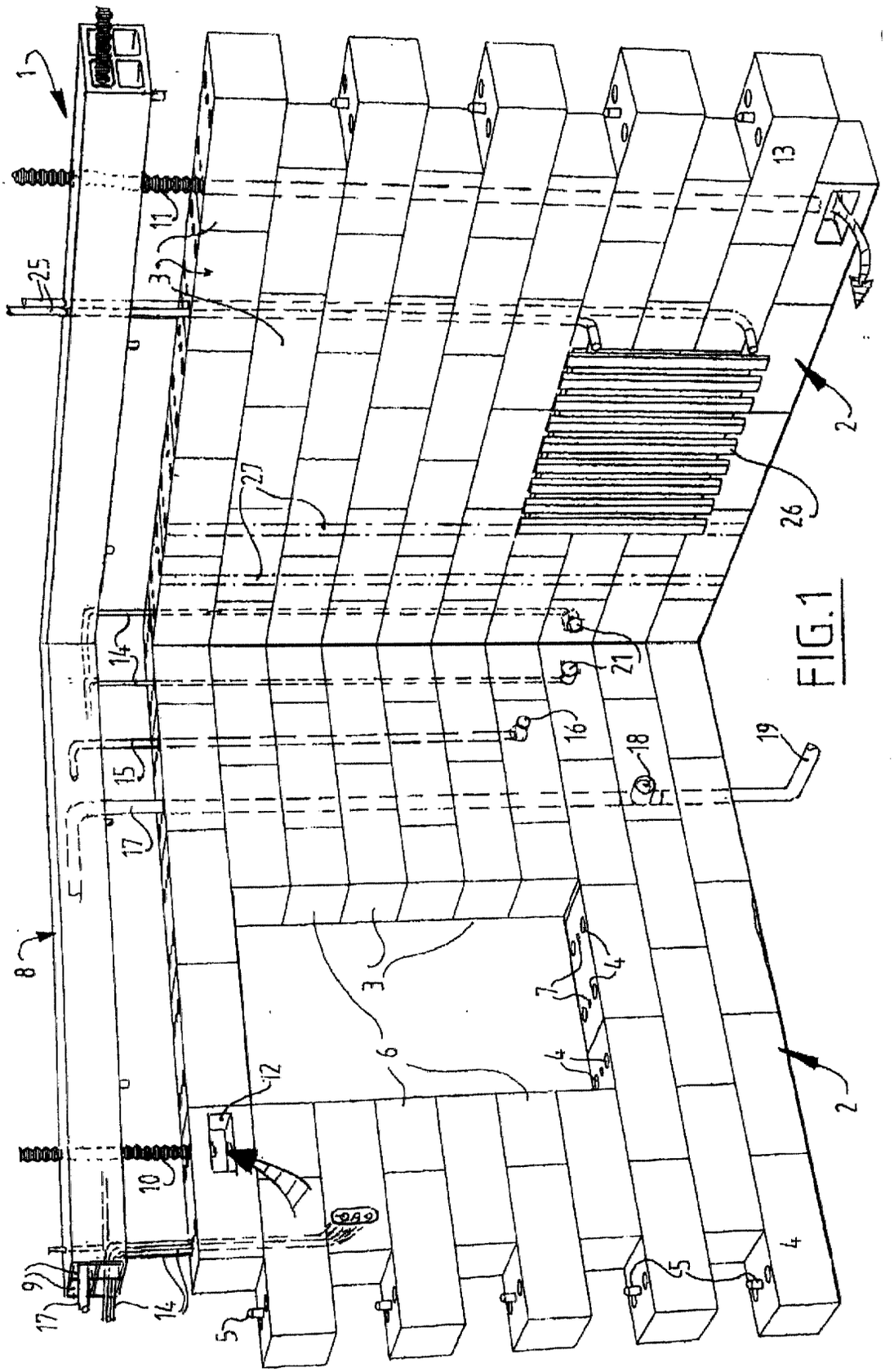

FIG.1

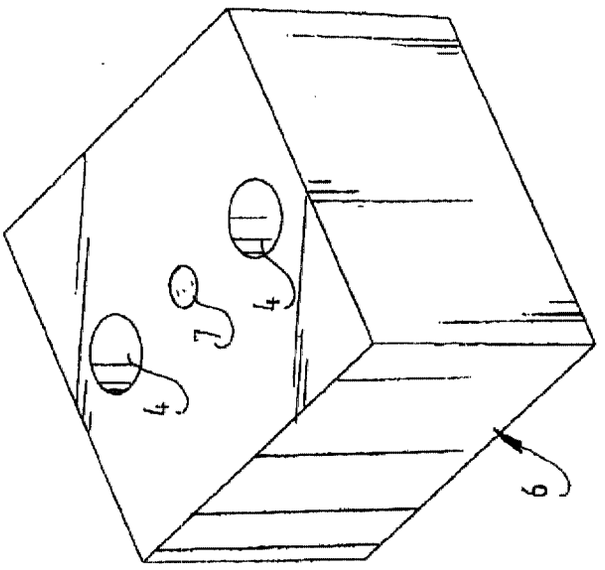

FIG.3

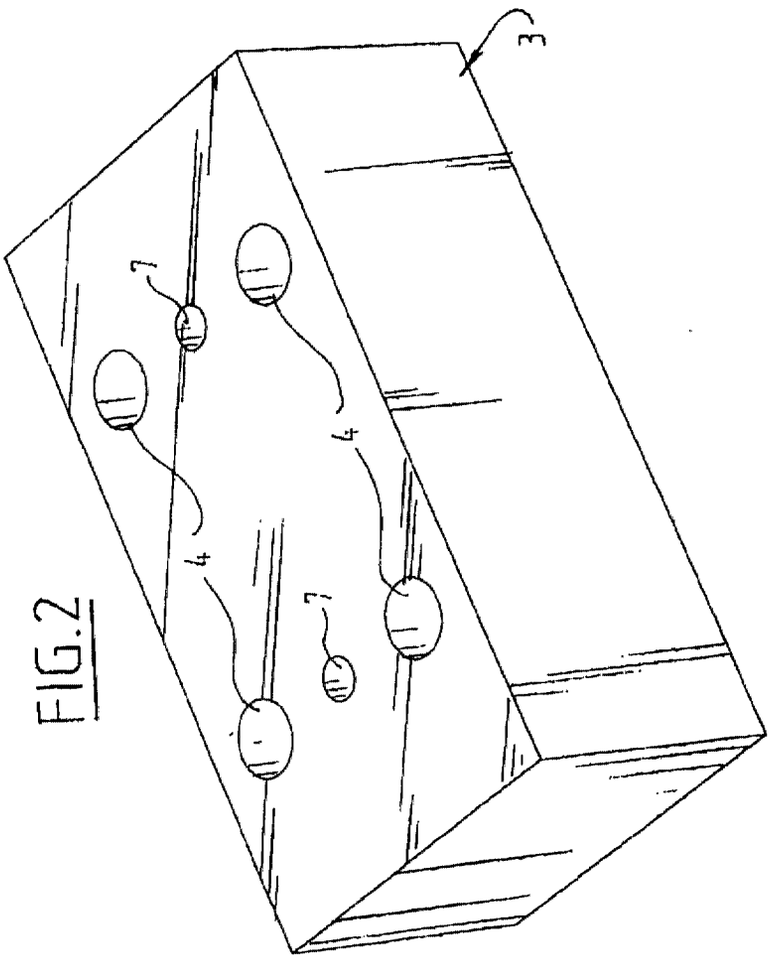

FIG.2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 20 2650

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.7)
Y	US 5 657 597 A (LOFTUS) 19 August 1997 (1997-08-19) * figures 1,6 *	1,3,4,6	E04C1/39
Y	DE 43 15 001 A (PISTNER) 14 October 1993 (1993-10-14) * the whole document *	1,3,4,6	
X	EP 0 281 149 A (STOKKEBO A/S) 7 September 1988 (1988-09-07)	7-9	
A	* column 3, line 33 - column 4, line 27; figure 3 *	2,5	
A	DE 30 13 520 A (GREBAU GRESCHBACH-INDUSTREIBAU GMBH & CO. KG) 15 October 1981 (1981-10-15) * figure 1 *	12	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E04C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	26 September 2001	Mysliwetz, W

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 20 2650

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.

26-09-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5657597 A	19-08-1997	NONE	
DE 4315001 A	14-10-1993	DE 4315001 A1	14-10-1993
EP 281149 A	07-09-1988	DK 113787 A	06-09-1988
		DK 113887 A	06-09-1988
		EP 0281149 A1	07-09-1988
DE 3013520 A	15-10-1981	DE 3013520 A1	15-10-1981

EPO FORM P0459

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