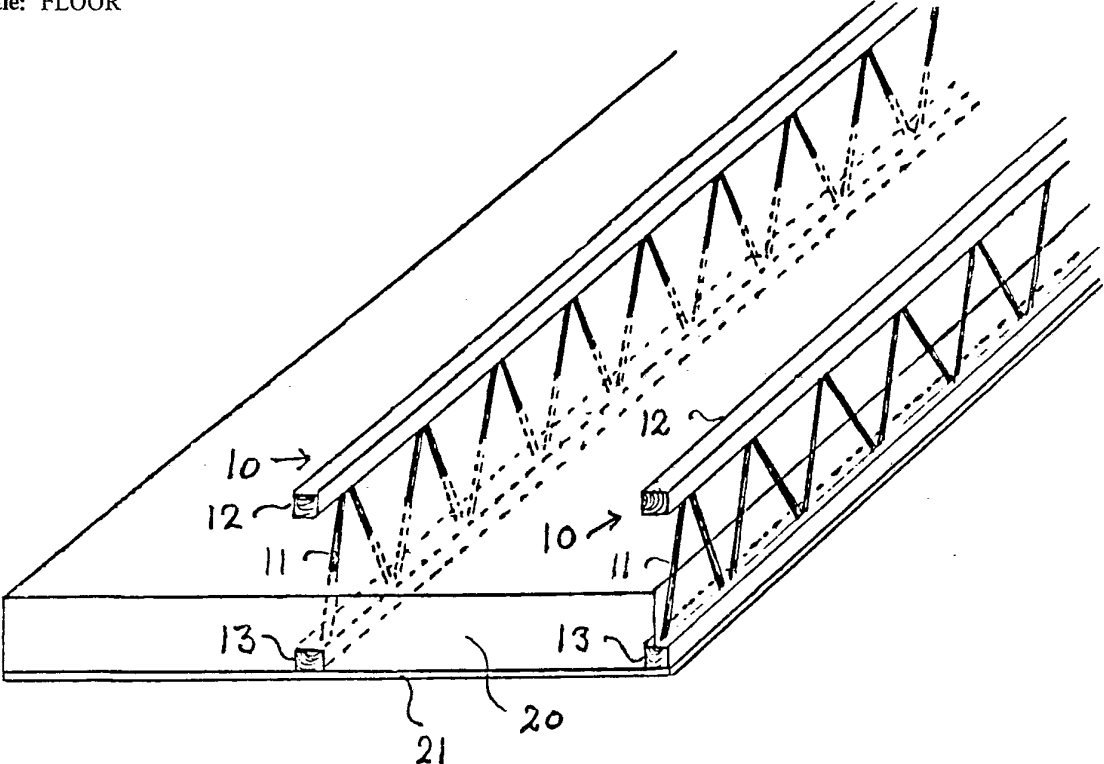


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ³: E04C 2/50; E04B 5/10	A1	(11) International Publication Number: WO 80/01817 (43) International Publication Date: 4 September 1980 (04.09.80)
(21) International Application Number: PCT/SE80/00053 (22) International Filing Date: 27 February 1980 (27.02.80) (31) Priority Application Number: 7901731-5 (32) Priority Date: 27 February 1979 (27.02.79) (33) Priority Country: SE (71) Applicant (for all designated States except US): FRELE- NA AB [SE/SE]; Box 385, S-901 08 Umeå 1 (SE). (72) Inventor; and (75) Inventor/Applicant (for US only): ERICSSON, Axel, Bert, Roger [SE/SE]; Fågelvägen 5, S-913 00 Holmsund (SE). (74) Agent: EDHOLM, Sigurd; Högbovägen 18 C, S-811 32 Sandviken (SE).		(81) Designated States: AT, AT (European patent), BR, CH, CH (European patent), DE, DE (European patent), DK, FR (European patent), GB, GB (European pa- tent), JP, NL, NL (European patent), NO, US. Published <i>With international search report</i>
(54) Title: FLOOR 		
(57) Abstract Floor in a building comprising joists and between them slabs. According to the invention the joists are composed of a web (11) and two flanges (12, 13), the web having a lattice structure, and the slabs (20) consisting of a cast, light material and having their top surface lower than the top surface of the joists (11).		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	LI	Liechtenstein
AU	Australia	LU	Luxembourg
BR	Brazil	MC	Monaco
CF	Central African Republic	MG	Madagascar
CG	Congo	MW	Malawi
CH	Switzerland	NL	Netherlands
CM	Cameroon	NO	Norway
DE	Germany, Federal Republic of	RO	Romania
DK	Denmark	SE	Sweden
FR	France	SN	Senegal
GA	Gabon	SU	Soviet Union
GB	United Kingdom	TD	Chad
HU	Hungary	TG	Togo
JP	Japan	US	United States of America
KP	Democratic People's Republic of Korea		

Floor

The present invention relates to a floor comprising joists carrying between them slabs. Such floors have usually a high weight which requires strong dimensioning and renders it difficult to make channels for wiring, tubing, ventilation and heating. The invention is an improvement in this regard in that the joists have a lattice shaped web, for instance a rod bent to zigzag shape, and two flanges. Furthermore the slabs are made of a light material, for instance cellular plastic as polyurethane, and have a lower height than the joists and are placed at the lower portion of the joists so that a free space is formed at the upper part of the joists. The invention is closer described in the following specification with drawings showing the following.

Fig. 1, a perspective view of a floor according to the invention.

Fig. 2, a section of the floor in Fig. 1 along the joists.

Fig. 3, a section of the floor in Fig. 1 perpendicularly to the joists.

The joists 10 are composed of a web 11 having the form of a lattice formed by a metal rod or similar bent to zigzag shape and two wood flanges, one upper 12 and one lower flange 13. The web is fastened to the flanges, suitably by counter-sinking into recesses in the flanges and fastening them there by glueing or some similar method. As a glue can suitably be used a hardening glue, for instance polyurethane or some other glueing plastic, or epoxy glue. The invention can, however, also be used for similar joists having a mechanical fastening of the web in the flanges by means of nails, bolts or other fastening means.

At the lower part of the joists there are attached by casting or in some other way slabs 20 which have a lower height than the joists and suitably have their lower side level with the lower side of the joists. The upper side of the slabs will in this way lie below the upper flange of the joists, for instance at half the height of the joist. The



slabs 20 shall be made of a light material, suitably cellular plastic as polyurethane, which adheres to the joists with a glueing effect, and shall be self-supporting and suitably also be strong enough to carry the assemblers
5 during the erection stage. On the bottom side of the slabs a panel 21 can be added which also can be made adhering to the slab by the glueing effect mentioned.

The slabs 20 can suitably be cast in contact with the joists 10 for instance by prefabricating units on the
10 ground; each unit comprising one or more joists with attached slabs 20. These units are then lifted to their place in the building and the floors can be given the desired size by mounting a number of units side by side. Alternatively it is of course possible first to mount the joists 10 in their
15 final place in the building and then cast the slabs 20 in their final place.

The described structure has a low weight. The position of the slab 20 at the lower part of the joists 10 leaves a space 23 above the slab 20 up to the floor panel 22 which
20 is attached to the upper flange 12 of the joists. This space 23 is open not only along the joists but also transversely through the openings in the lattice structure of the webs 11. The floor can thus be used for installation of wiring and piping for water and drain in all directions along the
25 floor. It is also possible to use the floor for circulation of air in all directions, with or without ducts, for cooling or heating or fresh air supply.

The use of wood flanges according to the described embodiment has the advantage that the floor boards can be nailed
30 directly to the flanges. Alternatively metal flanges can be used, for instance of aluminium, steel or other suitable metals.

A specific advantage of the described structure, besides the already mentioned, is the low weight of the structure
35 in combination with a great stiffness, properties which facilitate the lifting and assembly of prefabricated units.



Claims

1. Floor comprising joists and between them slabs, characterized in that the joists (10) have a web (11) and two flanges (12,13), the web (11) having a lattice structure and the slabs (20) consisting of a cast, light material and having their top surface lower than the top surface of the joists (11).
2. Floor as defined in claim 1, characterized in that the bottom side of the slabs (20) is substantially level with the bottom side of the joists.
3. Floor as defined in any of the preceding claims, characterized in that the web is a metal rod bent to zigzag form.
4. Floor as defined in claim 3, characterized in that the flanges (12,13) are of wood and have recesses in which the bent portions of the web are inserted.
5. Floor as defined in claim 3 or 4, characterized in that the bent portions of the web (11) are attached to the flanges (12,13) by glueing.
6. Floor as defined in claim 5, characterized in that the glue is polyurethane.
7. Floor as defined in any of the preceding claims, characterized in that the slabs (20) are made of cellular plastic as polyurethane.
8. Floor as defined in any of the preceding claims, characterized in that the floor is assembled from prefabricated units, each consisting of one or more joists (10) and adjoining slabs (20).
9. Floor as defined in any of the preceding claims, characterized in that the slabs are made of a material that adheres with a glueing effect to the joists.



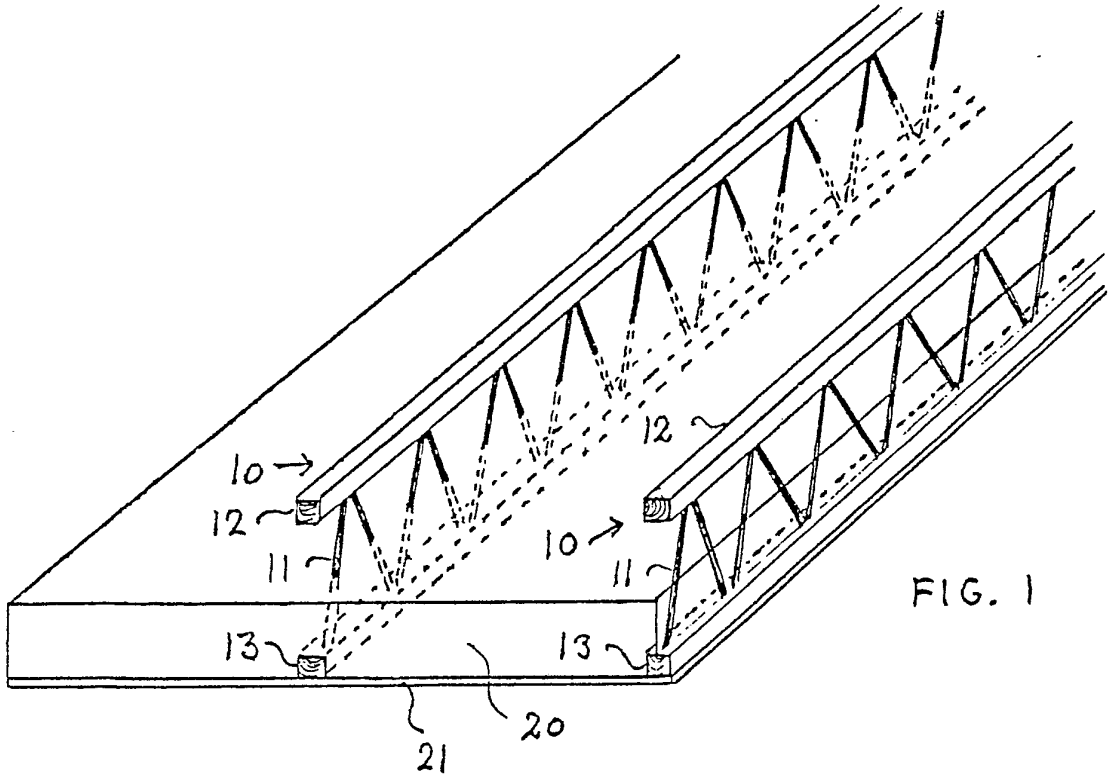


FIG. 1

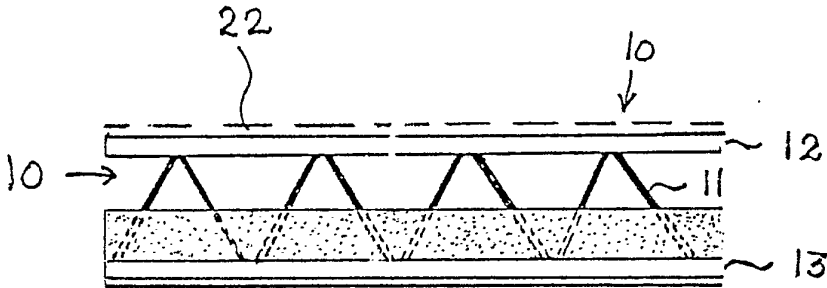


FIG. 2

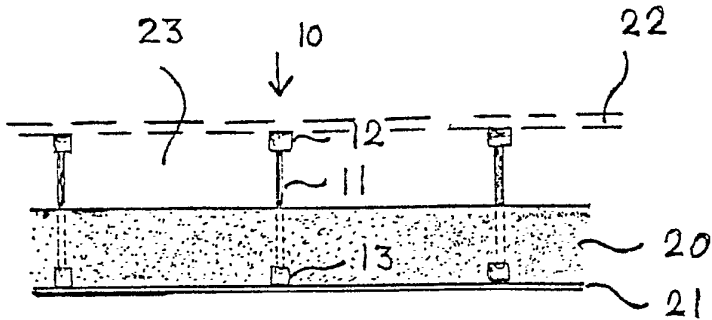
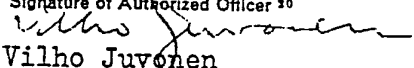


FIG. 3

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE80/00053

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ³ According to International Patent Classification (IPC) or to both National Classification and IPC 3 E 04 C 2/50; E 04 B 5/10		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
IPC 3 US C1	E 04 C 2/50; E 04 B 5/10-12 52:410, 692	
Documentation Searched other than Minimum Documentation to the extent that such Documents are Included in the Fields Searched ⁵		
SE, NO, DK, FI classes as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category *	Citation of Document, ¹⁶ with Indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
A	DE, A, 1 609 571 published 1970, May 26, Ainedfer O	1-3
A	DE, A, 2 138 074 published 1973, February 8, Meier W A	1-9
A	FR, B, 1 337 792 published 1963, August 12, Menez L	3-5
A	FR, B, 2 373 651 published 1978, July 7, Bouet E J F	3-5
* Special categories of cited documents: ¹⁵ "A" document defining the general state of the art "E" earlier document but published on or after the international filing date "L" document cited for special reason other than those referred to in the other categories "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but on or after the priority date claimed "T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention "X" document of particular relevance		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ¹		Date of Mailing of this International Search Report ²
1980-03-25		1980-03-31
International Searching Authority ¹		Signature of Authorized Officer ²⁰
Swedish Patent Office		 Vilho Juvonen