

EUROPEAN PATENT APPLICATION

Application number: **81109785.6**

Int. Cl.³: **B 21 D 37/20**

Date of filing: **19.11.81**

Priority: **19.11.80 DK 4940/80**

Date of publication of application:
26.05.82 Bulletin 82/21

Date of deferred publication of search report: **15.09.82**

Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

Applicant: **Aktieselskabet Aalborg**
Portland-Cement-Fabrik
Roerdalsvej 44 P.O. Box 165
DK-9100 Aalborg(DK)

Inventor: **Andersen, Arne**
Söparken 61 Klokkeholm
DK-9320 Hjøllerup(DK)

Inventor: **Larsen, Niels Jørgen**
Ranunkelvej 4 Klokkeholm
DK-9320 Hjøllerup(DK)

Representative: **Patentanwälte Grünecker, Dr.**
Kinkeldey, Dr. Stockmair, Dr. Schumann, Jakob, Dr.
Bezold, Meister, Hilgers, Dr. Meyer-Plath
Maximilianstrasse 43
D-8000 München 22(DE)

Tool for shaping articles.

A tool for shaping articles, such as tools for drawing, bending, and vacuum shaping, e.g., for making automobile body parts, has an active shaped surface part which is made by casting a cement-bound material (15) directly against the corresponding surface part of the model (12). This cement-bound material (15) has a coherent matrix comprising

A) homogeneously arranged inorganic solid particles of a size of from about 50 Å to about 0.5 µm, or a coherent structure formed from such homogeneously arranged particles, and

B) densely packed solid particles having a size of the order of 0.5 - 100 µm and being at least one order of magnitude larger than the respective particles stated under A), or a coherent structure formed from such densely packed particles, the particles B preferably being Portland cement particles.

Particles A are preferably ultrafine silica particles formed by growth from vapour phase and are substantially densely packed in the voids between the particles B. Particles A are especially present in an amount of 10 - 30% by volume, calculated on the combined volume of the particles A + B. Composite material for forming the matrix typically comprises Portland cement, ultrafine silica, water in low proportion, and a concrete superplasticizer in high proportion, optionally

with additional bodies such as fibers, and is easily shapeable.

Preferably, matrix additionally comprises particles which are of a strong material such as refractory grade bauxite, and is reinforced. Tool is easy to make and has a long useful life.

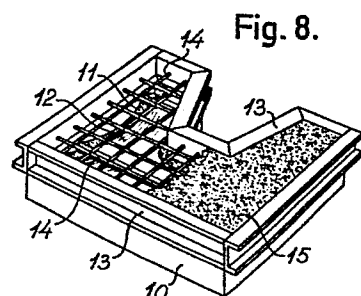


Fig. 8.



European Patent
Office

EUROPEAN SEARCH REPORT

0052380

Application number

EP 81 10 9785

| 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. 3) |
| D, E | EP-A-0 042 935 (AKTIESELSKABET AALBORG PORTLAND-CEMENT FA.) * the whole document; especially claims 60, 61; figures 38-40; page 70, line 9 - page 74, line 5 * ----- | 1-46 | B 21 D 37/20 |
| | | | TECHNICAL FIELDS SEARCHED (Int. Cl. 3) |
| | | | B 21 D |
| The present search report has been drawn up for all claims | | | |
| Place of search THE HAGUE | | Date of completion of the search 10-05-1982 | Examiner WELSCH H.R. |
| 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 | |