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

(11) Publication number: **0 305 562 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **87112725.4**

(22) Date of filing: **01.09.87**

(51) Int. Cl.4: **E04F 15/08 , B44C 3/12 , B44C 1/28**

(43) Date of publication of application:
08.03.89 Bulletin 89/10

(84) Designated Contracting States:
BE CH DE ES FR GB GR IT LI

(71) Applicant: **Al-Saleh, Abdul Aziz Abdullah**
P.O. Box 21952
Riyadh 11985(SA)

(72) Inventor: **Al-Saleh, Abdul Aziz Abdullah**
P.O. Box 21952
Riyadh 11985(SA)

(74) Representative: **von Creytz, Dietrich, Dipl.-Phys.**
Tannenweg 25
D-5144 Wegberg-Beeck(DE)

(54) A tile and a floor decoration system.

(57) A floor decoration system, for instance of cement tiles, includes three designs for self spacing tiles for developing separating lines and/or voids between adjacent tiles and/or for producing separating bands between the tiles or for producing minor decorations within the viods, which are to be filled at the site.

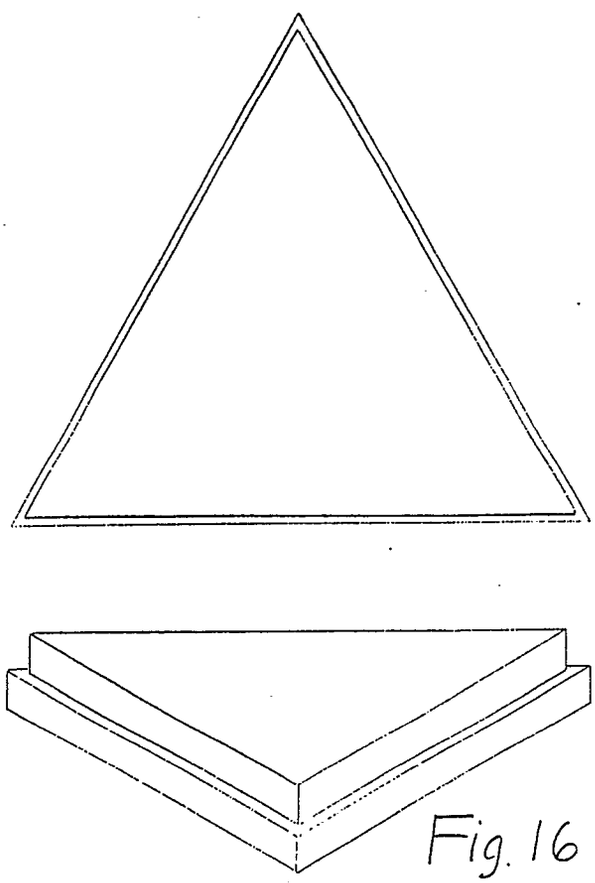

Fig. 16

EP 0 305 562 A1

A tile and a floor decoration system

The present invention relates to a tile to be used as a main decorative unit in a floor decoration system. The invention furthermore relates to a floor decoration system comprising a prefabricated self-spacing tile constituting a main decorative unit, and a filler to be filled at the site.

In floor decoration systems an unlimited number of different patterns is used. Many of the patterns require a great variety of specially formed and/or decorated tiles. Furthermore, for installation often it is necessary to construct and to use additional specially formed tools, called spacers, to lay the tiles correctly at the site. Frequently, tiny and/or easily breakable tiles, which are particularly difficult to transport and to install, are required.

The present invention is based on the problem of providing a floor decoration system allowing broad and unlimited ranges of patterns and geometrical decoration containing fine and tiny interfaced decorative units without requiring a respective variety of different tile shapes or decorations and without additional spacers being necessary to install the tiles clearly and exactly separated, and thus reducing the cost as well as making the installation simple. Particularly, the new system should be installable by using plain tiles only, for example of terrazzo or cement, having standard geometrical pattern in each decorative shape. There is another problem on which the invention is bas ed, that is to apply said system in the design of roof tiles which prevent water leakage through separating lines between tiles as these lines can be filled completely with a filler.

A first solution according to the invention consists, for the tile to be used as a main unit in a floor decoration system in that at least at one edge of each main unit the bottom side of which overlaps in a step-like way the tile top side at a distance sufficient to define a distinct separating linear or channel-like gap between the top side edges of adjacent main units when tiling. Such an inventive tile renders it possible to establish a floor decoration system comprising a prefabricated, self-spacing tile constituting a main decorative unit and a filler to be filled at the site, whereby said main units are installed to join one another at a separating line defined by the overlapping or projecting bottom side edge and whereby said gaps are filled with a filler, particularly with a coloured filler.

Thus, the above purposes can be achieved by using said self-spacing tiles aiming at projecting separating lines between adjacent bottom side edges defining a distinctly presupposed pattern of plain tiles having standard geometrical shape, which are surrounded or bound by exactly defined bands of filler, without an additional spacer.

A second solution according to the invention consists in a floor decoration system comprising a prefabricated self-spacing tile constituting a main decorative unit and a filler to be filled at the site, wherein said main units, each having selected corners at its edge, are arranged to meet one another at one respective selected corner to confine areal voids between the opposite edges of each group of two or more main units; and wherein said voids are filled at the site with a filler, such that the voids comprise minor units of the same but differently coloured material of which said main units are fabricated.

While the above-mentioned first floor decoration system will be used for production of separating lines between joining tiles by extending the tile bottom in a step-like way from the top side for producing linear or channel-like gaps (which are to be filled with a coloured filler) this second floor decoration system of the invention makes it possible to produce minor decorative or patterned units in the shape of said areal voids. These voids are filled after the installation of the main units and thus allow the fabrication of a large variety of patterns, even that patterns which cannot withstand transport and/or installation when pre-fabricated.

In the context of this invention, the term "main unit" or "main decorative unit" means a decorative pattern which is constituted by prefabricated tiles that are used to establish a floor decoration system, while the term "minor unit" or "minor decorative unit" means a decorative shape of that parts of the floor decorative system, which are constituted by the filling of those regions that are not covered by the decorative pattern of the main units, particularly the minor units are formed by filling areal voids between or even in the prefabricated tiles. Especially that voids which remain after the installation of the main units are to be filled at the site.

Thus, the second system of the present invention resides in a floor decoration which consists of pairs, triplets or larger groups - briefly of multi pairs - of main units without a contact between the edges of main units. In this embodiment, the main units are installed by arranging their corners opposite to each other with some selected angles, so that said voids are confined between the edges of said main units. After filling these voids with a suitable filler to distinguish them from the main units the voids represent the minor units of decorative patterns. By the way, said selected angles particularly can be controlled by the opposition of changeable or selected extensions of the tile bot-

tom edges.

Furthermore, a third inventive floor decoration system resides in that said main units are arranged to join one another at least partly at said separating lines accompanied by said linear gaps and defined by selecting one of said projecting bottom side edges, and to confine areal voids between the non-joining full or part edges of which, wherein said gaps being filled with a filler at the site constituting separation bands between adjacent main units and wherein said voids after being filled with a filler confine said minor units.

Broadly, this third system can consist of two units or more whereby there is contact between the edges of the main units. This solution furnishes a combination of the first and second floor decoration system, since the main units are self-spacing as in the case of the first solution (for projecting the separating linear gap and bands and in addition to that, after installation of the main units, areal voids which represent the geometrical shape for minor units shall appear and shall be filled with a suitable filler to form the minor units of the second system as well as the separation bands of the first system.

Summarizing, if the pattern of the second system is defined to consist of multi pairs or groups, the pattern of the third system would be well described to consist of multi pairs or groups too - remembering that each pair, triplet and so on of the main units confines a minor unit - while the pattern of the first system, which does not confine any minor unit, may be said to consist as a whole of a multi unit.

Thus, in general, the invention resides in a floor decoration system (using terrazzo or cement tiles etc.) which includes three designs for self-spacing tiles for developing, separating or joining lines between tiles having geometrical shape and/or for producing minor decorations in the shape of voids to be filled at the site. As the geometrical pattern of the tiles of the invention is not multiple, the installation is easy. A further advantage of the invention consists in that the decorative patterns are produced by using tiles having standard geometrical shape for each decorative pattern and, in addition, often only the pattern of the minor units appear as a decoration, whereby the minor units are formed by filling voids left between the edges of the main units after installation of which. Since the area of such voids may reach up to more than 50 % of the decorative shape, their production in the second and third system does save a quantity of tiles required for covering a certain area, so that this amount of saving covers the cost of filling the voids after installation of the main units.

Details of the invention will be explained by reference to some representations of embodiments in the attached drawings. The decorative patterns of the following simplified explanation are divided into three groups, each group being a sample of an unlimited shape whether known or new. Each group and its equivalents will be compared with one of the system designs. It is noted that in all shapes the main units are non fragile (when normally handled) because there are no large projections and because their ratio between length and width is small, particularly somewhere in the region of one and a half. Preferentially, in case of increasing said ratio, the thickness of the tiles shall be increased and/or cement admictures shall be added. In the drawings some of the minor units appear in dark colour for distinguishing them from the main units.

Fig. 1 to 5 represent some geometrical patterns corre sponding to the first floor decoration system of this invention. Each pattern consists of a multi unit of tiles. When tiling the floor with such pattern or equivalent, the separating lines between adjacent tiles normally should be distinctly established, so that the decorative shapes of them can be seen clearly. According to the first embodiment said exactly separating or joining lines between the tiles can be easily obtained without using additional spacers.

Fig. 6 to 10 show sets of floor decoration systems each consisting of multi groups or of so-called multi pairs. The corners of the main units are made opposite to some different angles with no contact between their edges but confining the minor units in between them. This embodiment, which corresponds to the above second system, makes it easy to decorate flooring by using prefabricated tiles or main units of one geometrical shape - except in the pattern of fig. 10, which consists of two geometrical shapes and four multi units - while the minor units are produced within the voids after installation of the main units.

Fig. 11 to 15 represent floor decorations each of them consisting of two multi units that differ from the previous shapes as there is contact between the edges of the main units, whereby these edges confine the minor decorative units in between them. Therefore, this third embodiment, which corresponds to the above third system, allows to make projecting, contacting or joining lines without using additional spacers and also to make the minor units to appear like tiles though they are formed just at the site by using the common contour of adjoining main units as the only outline.

Fig. 16 shows a top view and a perspective view of a triangular tile; and fig. 17 shows a perspective view of an installed group of square tiles.

In the first system or embodiment of fig. 1 to 5 or equivalents the separating lines between the tiles are made to project without using particular spacers by making the bottom side or rear part

edge of the tile to project off like a step from all or some edges of the tile top side. The step projection should reach a distance sufficient to make said separating lines projecting by e.g. 4 mm. Installing said main units the top side edges of the tiles are spaced from each other automatically in order intervals as a result of the projections of the bottom sides.

Fig. 16 represents a triangle tile the bottom side of which projects over the top side at all edges. After installation, the separating gaps, which surround the geometrical shapes of the tile top sides shall be filled with a coloured filler showing to obtain said separating bands. At last, the floor shall be polished for finishing the desired decorated pattern.

If the pattern of the first system consists of surface square tiles, the top side of the tiles can be spaced by order intervals of e.g. 5 mm without using said additional spacers, since the bottom side stands out in relation to the top side at all tile edges. At last, it is easy to fill spaces or gaps left between adjacent top sides with cement mortar or the like to prevent water leakage through them. Fig. 17 illustrates respective welds which are filles completely.

In the second system or embodiment of fig. 6 to 10 and respective equivalents all patterns have in common that there is neither a contact between the edges of the main units nor between the edges of the minor units. Thus, main units and minor units (as well as minor units and minor units) only have point contact with one another. It is noted that the corners of the main units meet with each other in various angles confining the minor units beween them.

In the second system the decoration only contains tiles with the geometrical shape of main units. The main units shall be installed in a constant arrangement of decorative shape in order that the minor units shall appear in the shape of voids to be filled after the installation of the main units. For easy installation of some shapes the opposition angle between the respective units can be adjusted by changeable projections coming from each tile. The lower projections shall meet one another to control the angle. Metallic models of the proposed geometrical shape of the voids can be placed during installation to adjust the opposition angles. After installation of the main units first the voids shall be filled for instance with plain concrete for making a sublayer in the voids. In the case of such a two-stage filling the work is continued by using the same mortar used in making the tile faces, which is made for instance from marble cuts or natural stone white gravel, marble powder or white cement. Then this top layer is covered with a finish layer, for instance of white or coloured cement powder for obtaining a smooth surface.

If the area of the voids is small as in the case of decorative pattern, e.g. also in or on the top side of a main unit, it may be sufficient to use the mortar of final coat as primer. After completion and setting of the units the floor shall be polished for smoothing the surface so that the decoration can be seen clearly.

In some decorative shapes of the invention the tiles are to be installed without having contact between each other, since the voids in between them are having decorative shapes integrating the decorative shape of the tiles.

In addition, according to a further development of this invention cavities having geometrical shape can be made on or in the top side of the tiles during the fabrication of which. These cavities can be filled either prior or after installation with differently coloured material.

The common thing among the patterns of the third system or embodiment (see fig. 11 to 15 and equivalents of which) is that there is contact between selected edges or at least selected sections of edges of the main units, while the non-contacting rest of the edges or sections of which respectively confine said minor units. The third system allows to produce separating linear gaps or bands (to be filled with a filler) between main units without using spacers, and additionally to produce the minor units in the shape of the areal voids, which appear after installation of the main units too and which are similarly to be filled by a filler at the site. For the installation prefabricated tiles are to be used in the shape of the main units. The respective tiles shall be self-spacing as in the case of the first embodiment where the bottom side edge projects step-like from the top-side edge, so that the top sides of adjacent tiles become distinctly spaced from one another when tiling and the linear gap between said parallel top side edges can be filled with a filler after the installation of the main units. In addition, in this third embodiment the minor units remain in the shape of areal voids to be filled at the site as in the case of the second system. At last, the floor shall be polished also to obtain a clearly visible decoration.

The systems of the invention provide a floor decoration without an increasing in cost and allow for decoration in accurate preselected shapes, even where it was until now difficult to form such shapes. Furthermore, the invention induces the possibility of obtaining several decorative patterns using the same type of tiles only by changing the arrangement of which during installation, as it can be seen in the case of the patterns of fig. 6 to 8, which are produced by using the same type of tiles.

Claims

1. A tile to be used as a main decorative unit in a floor decoration system, **characterized** in that at least at one edge of each main unit the bottom side of which overlaps in a step-like way the tile top side at a distance sufficient to define a distinct separating linear or channel-like gap between the top side edges of adjacent main units when tiling.

2. A floor decoration system comprising a prefabricated, self-spacing tile of claim 1 constituting a main decorative unit and a filler to be filled at the site, **characterized** in that said main units are installed to join one another at a separating line defined by the overlapping or the projecting bottom side edge and that said gaps are filled with a filler, particularly with a coloured filler.

3. A floor decoration system comprising a prefabricated self-spacing tile of claim 1 constituting a main decorative unit and a filler to be filled at the site **characterized** in that said main units, each having selected corners at its edge, are arranged to meet one another at one respective selected corner to confine areal voids between the opposite edges of each group of two or more main units; and in that said voids are filled at the site with a filler, such that the voids comprise minor of the same but differently coloured material of which said main units are fabricated.

4. A system of claim 2 and 3, **characterized** in that said main units are arranged to join one another at least partly at said separating lines accompanied by said linear gaps and defined by selected ones of said projecting bottom side edges, and to confine areal voids between the non-joining full or part edges of which, wherein said gaps being filled with a filler at the site constituting separation bands between adjacent main units and wherein said voids after being filled with a filler confine said minor units.

5. A system of claim 3, **characterized** by including tiles having a the bottom side edge of which changeable projections, which are arranged to meet each other for adjustment of an opposite tile, particularly of an opposite tile corner.

6. A system of claim 4, **characterized** by including tiles having geometrical shape without projections at the bottom side edge.

7. A system of one or more of claims 1 to 6, **characterized** by including tiles having geometrical shapes to be installed apart from each other at equal intervals to form continued or separated voids having geometrical shapes complementally to a pre-selected decorative shape and to be filled after installation with the material of which the tiles are fabricated but of different colour.

8. A system of one or more of claims 1 to 7, **characterized** by including tiles having at least one cavity with a geometrical shape on the top side, whereby the cavity is to be filled with coloured mortar either after or prior to installation with decorative shapes constituting minor units.

9. A system of one or more of claims 1 to 8, **characterized** by including self spacing cement surface tiles, the bottom side of which projects off for filling separating lines completely locked between adjacent tiles with cement mortar for preventing water leakage.

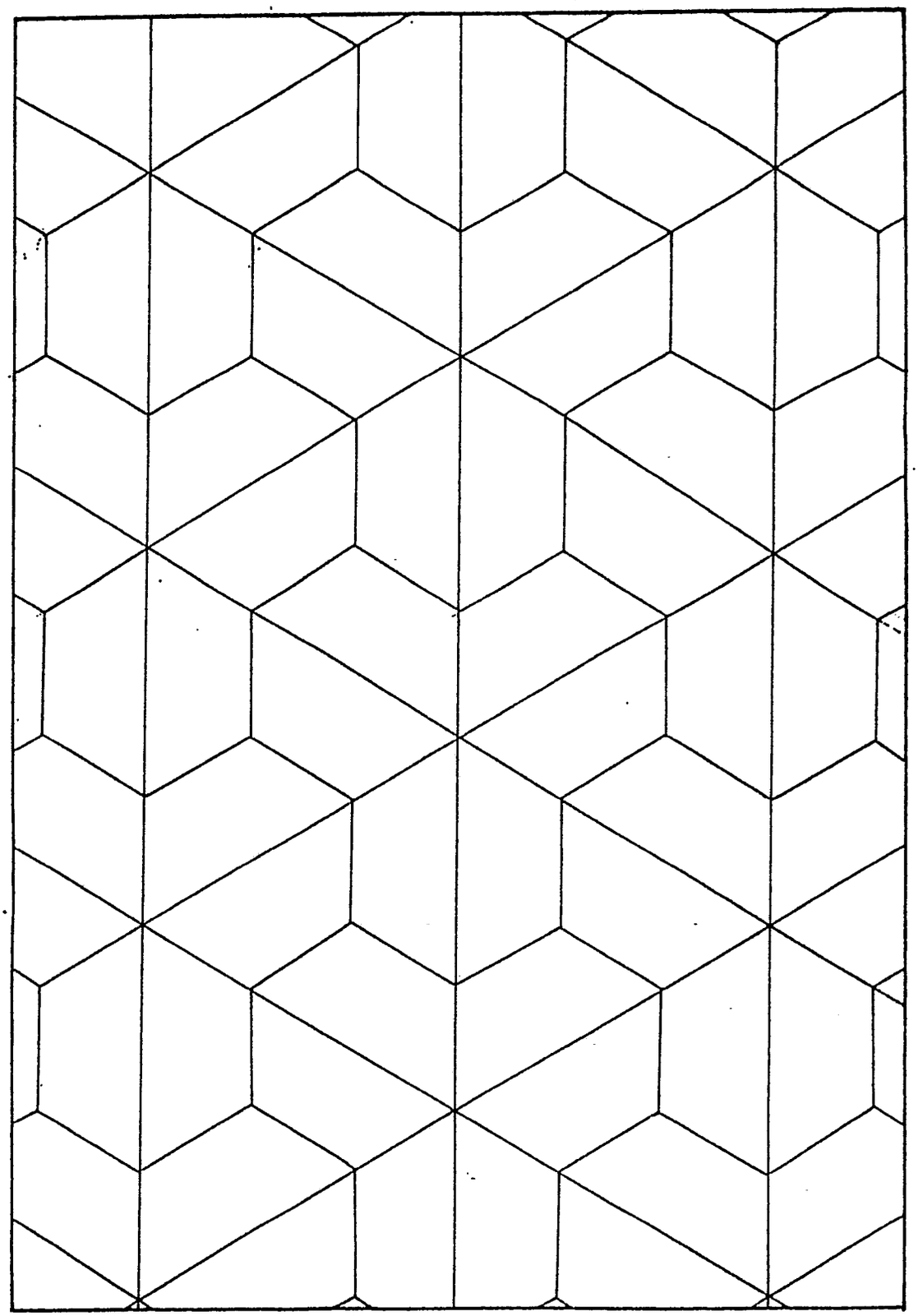

Fig. 1

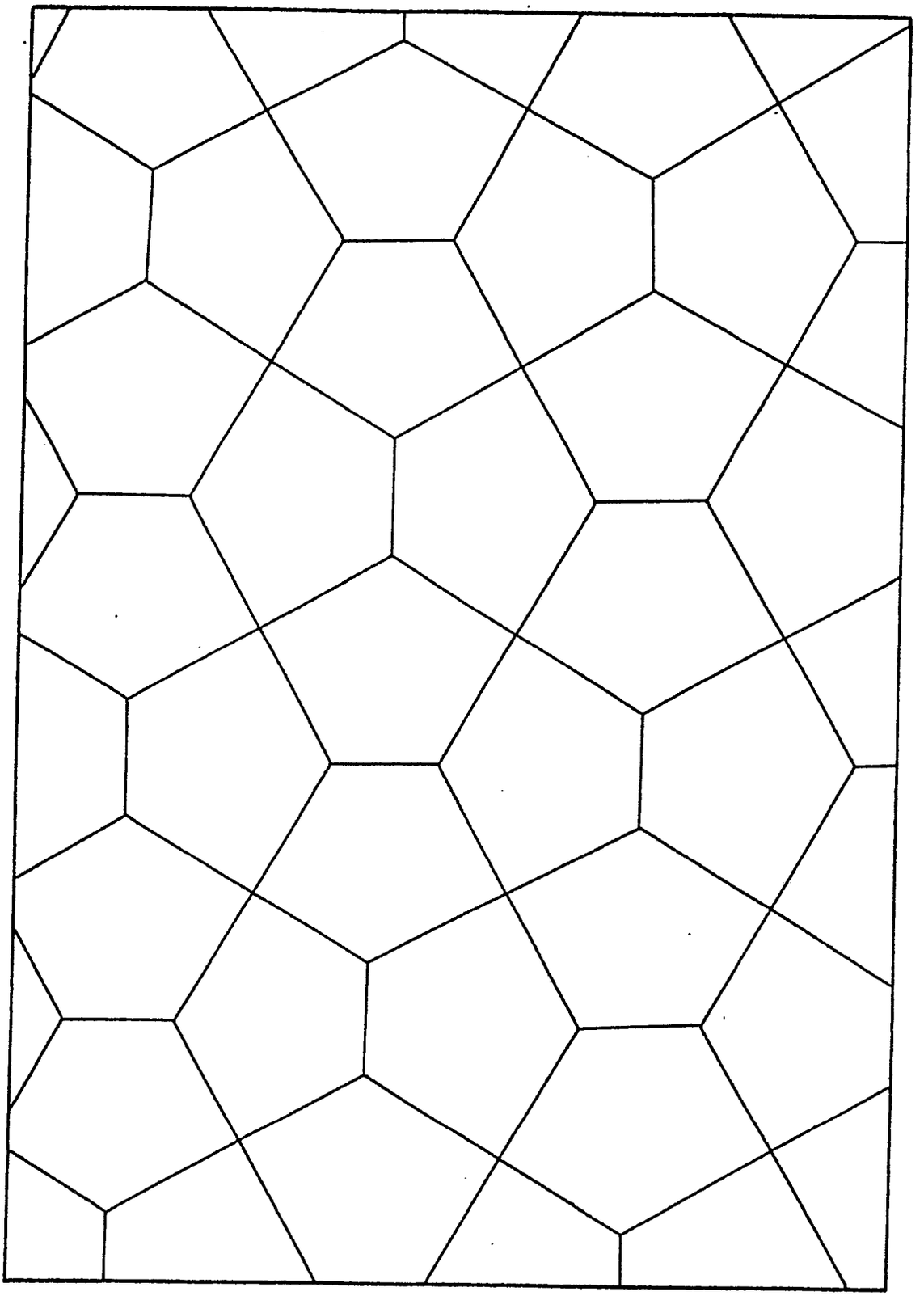

Fig. 2

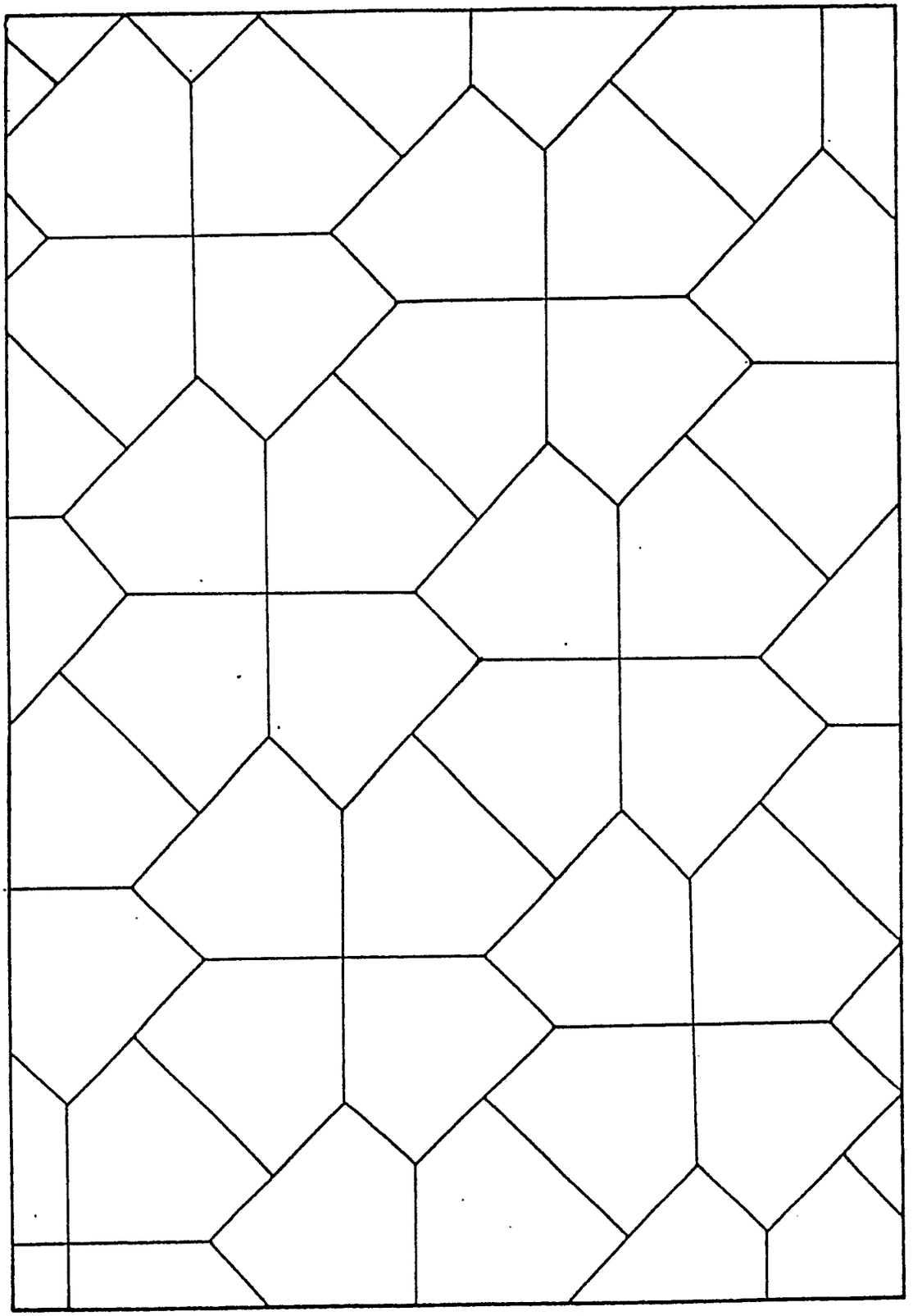

Fig. 3

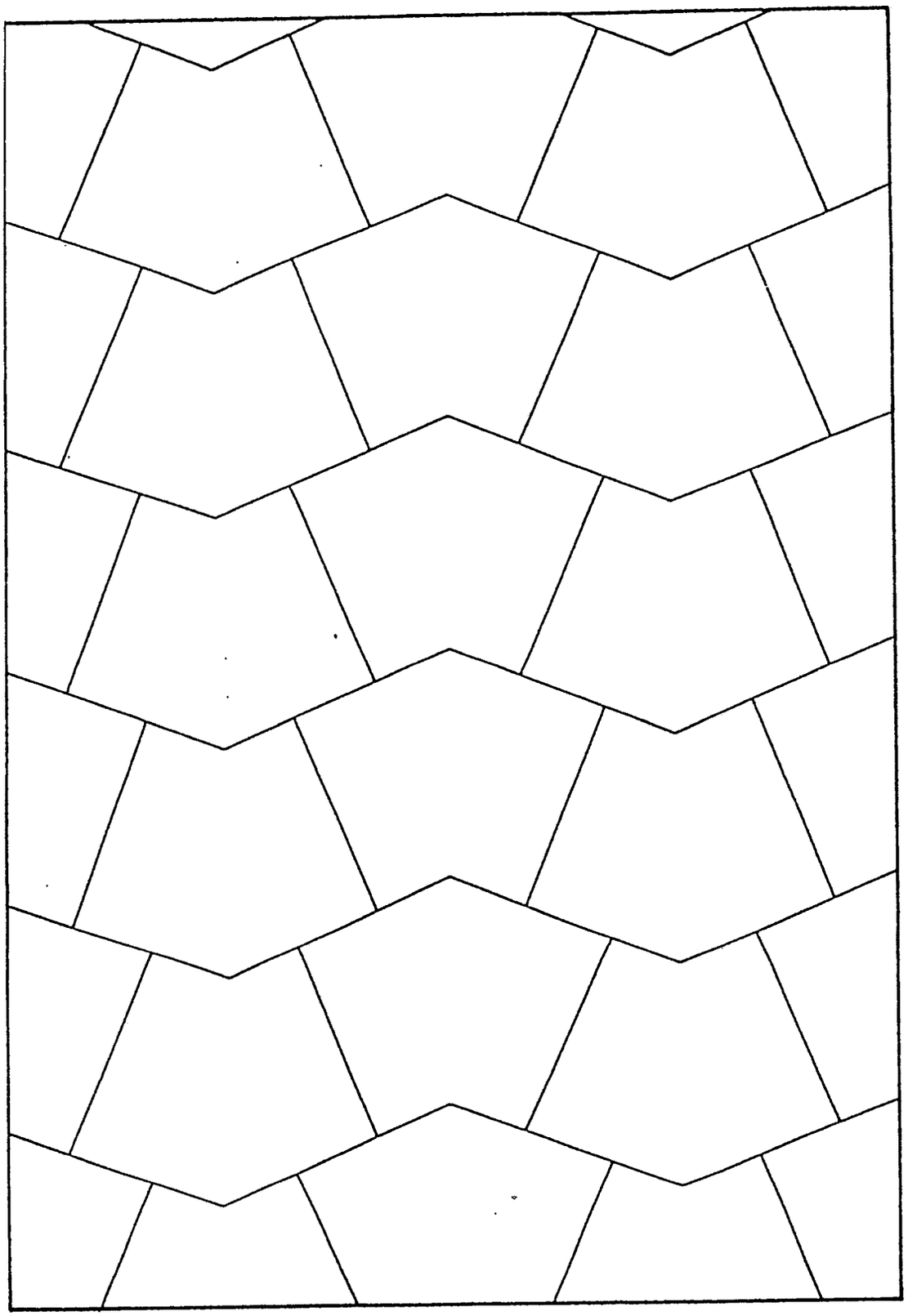

Fig. 4

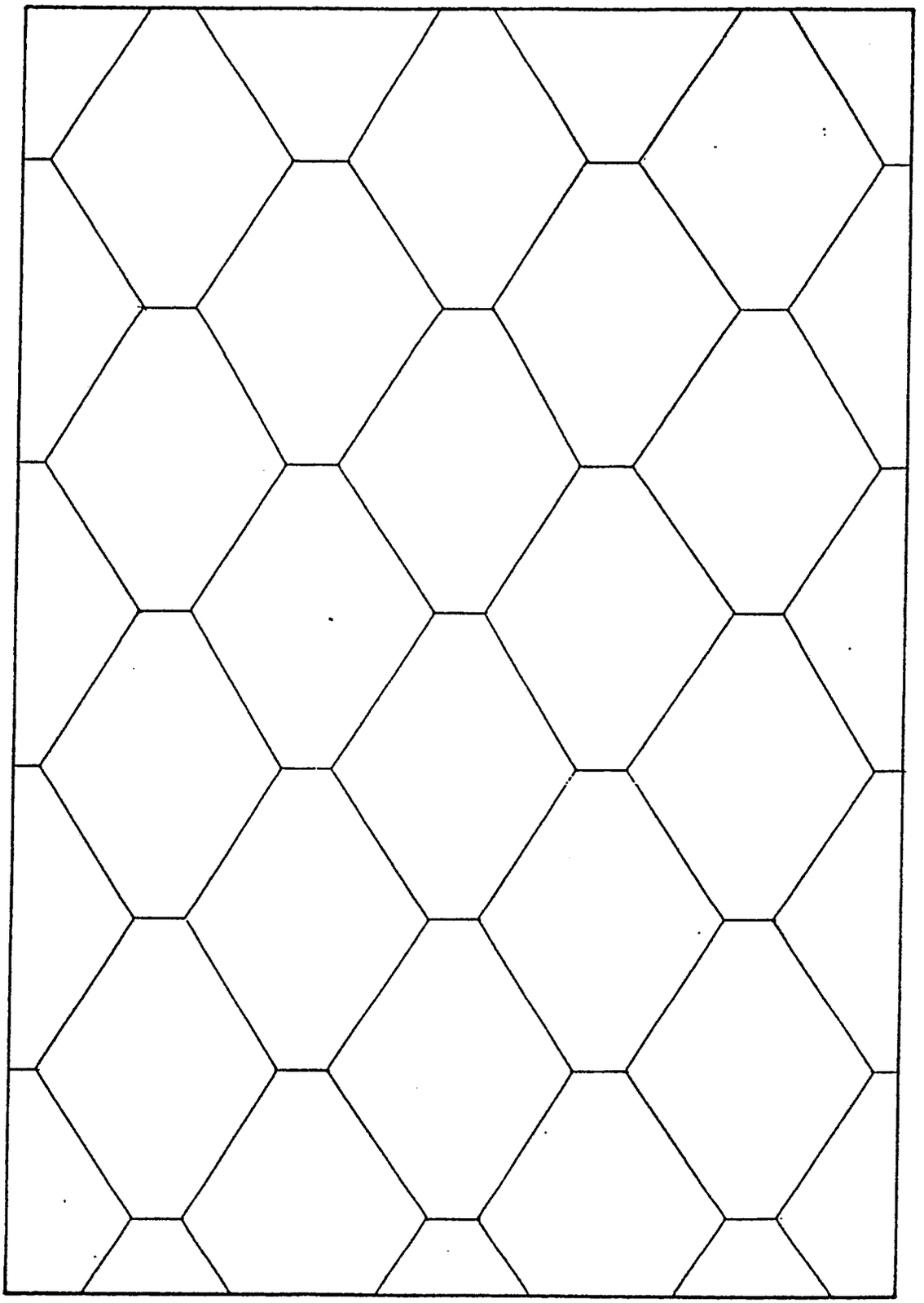

Fig. 5

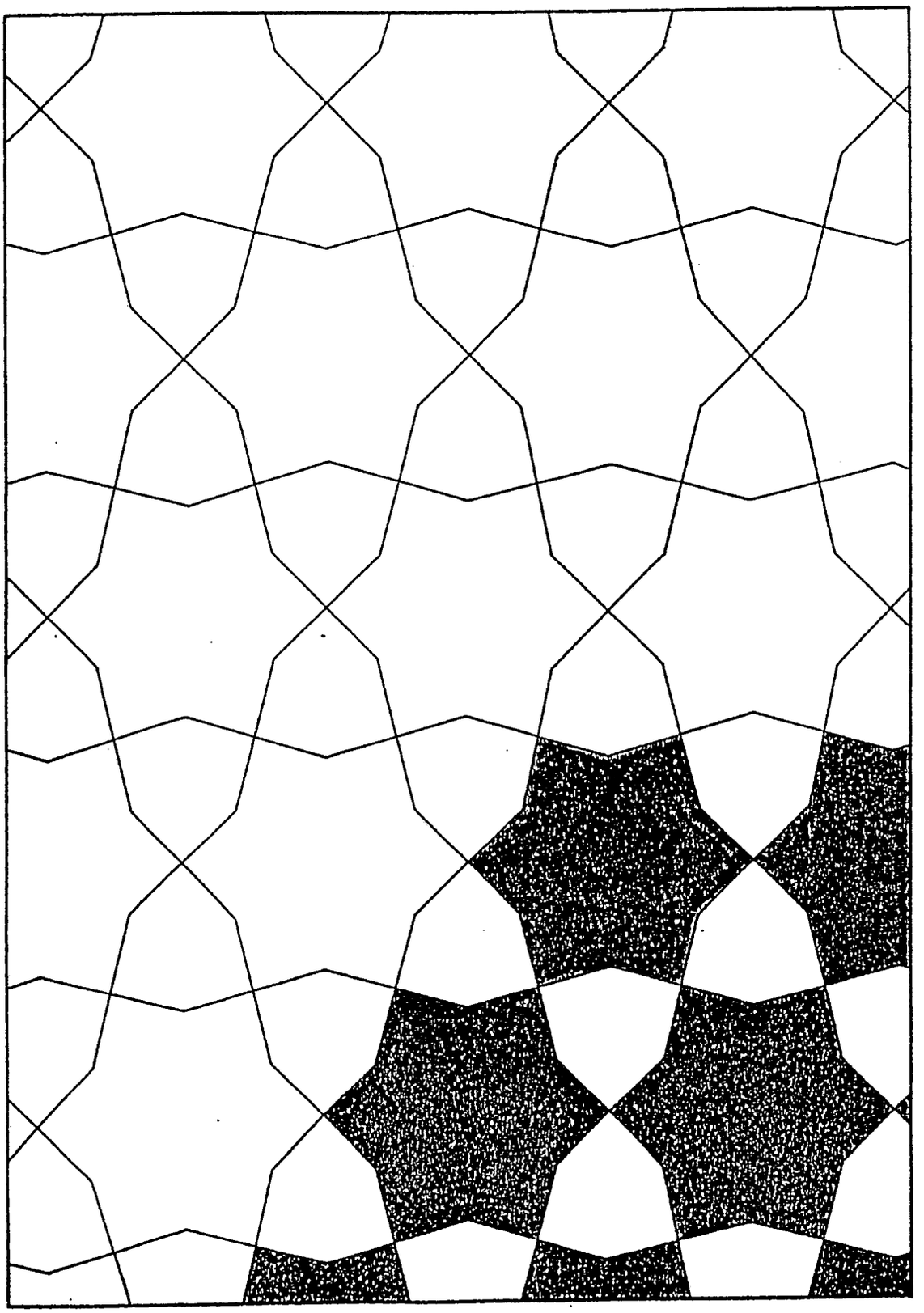

Fig. 6

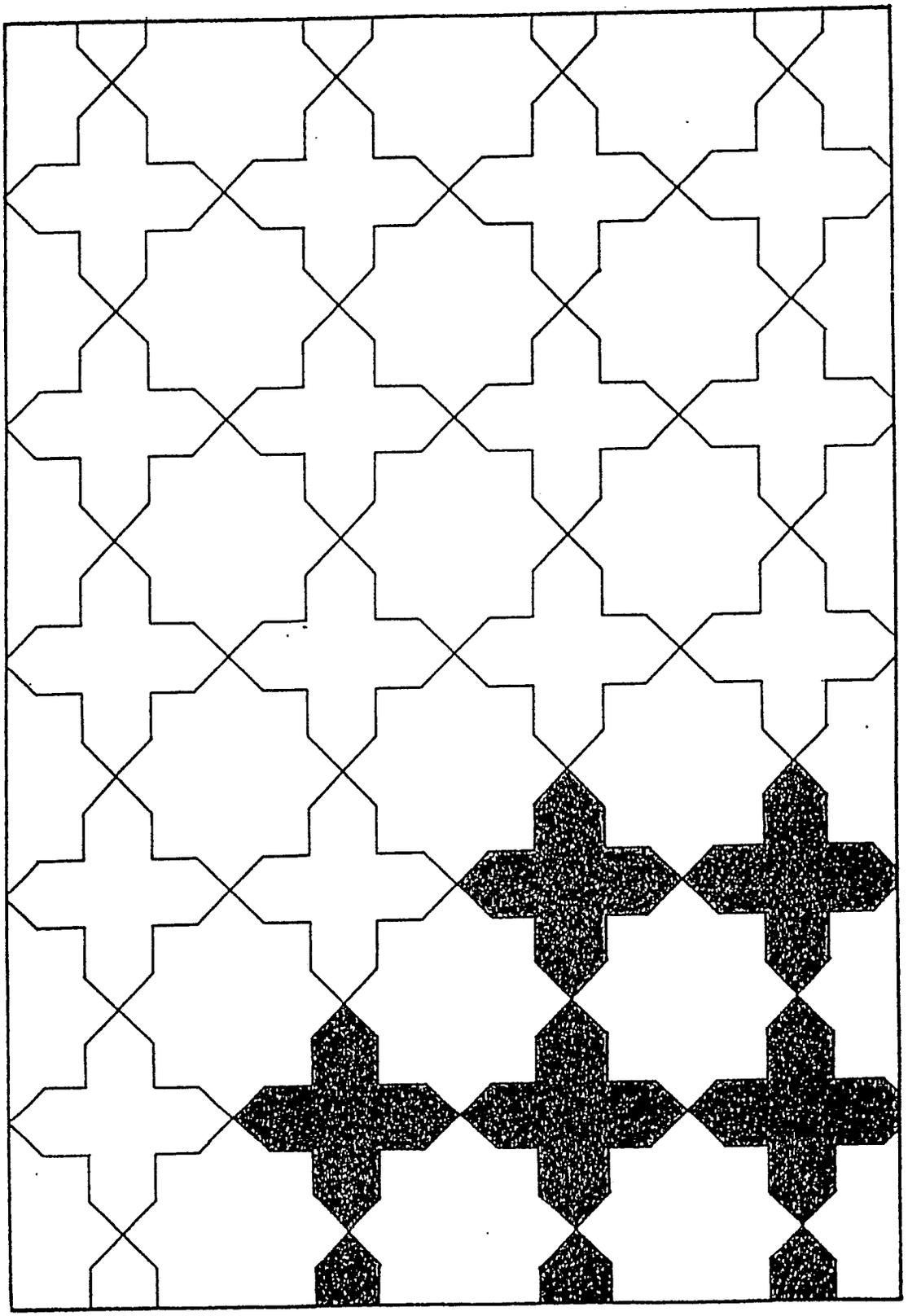

Fig. 7

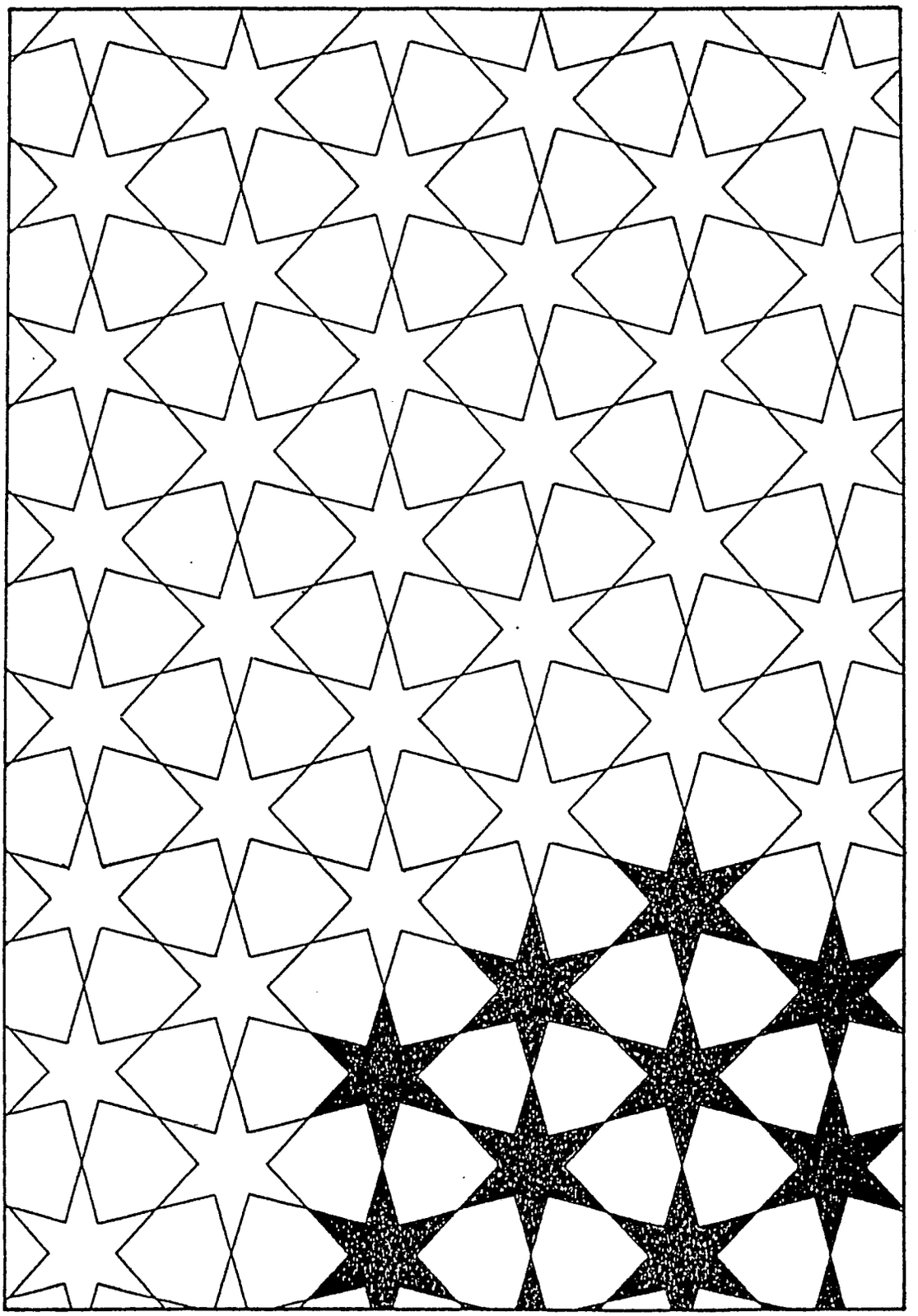

Fig. 8

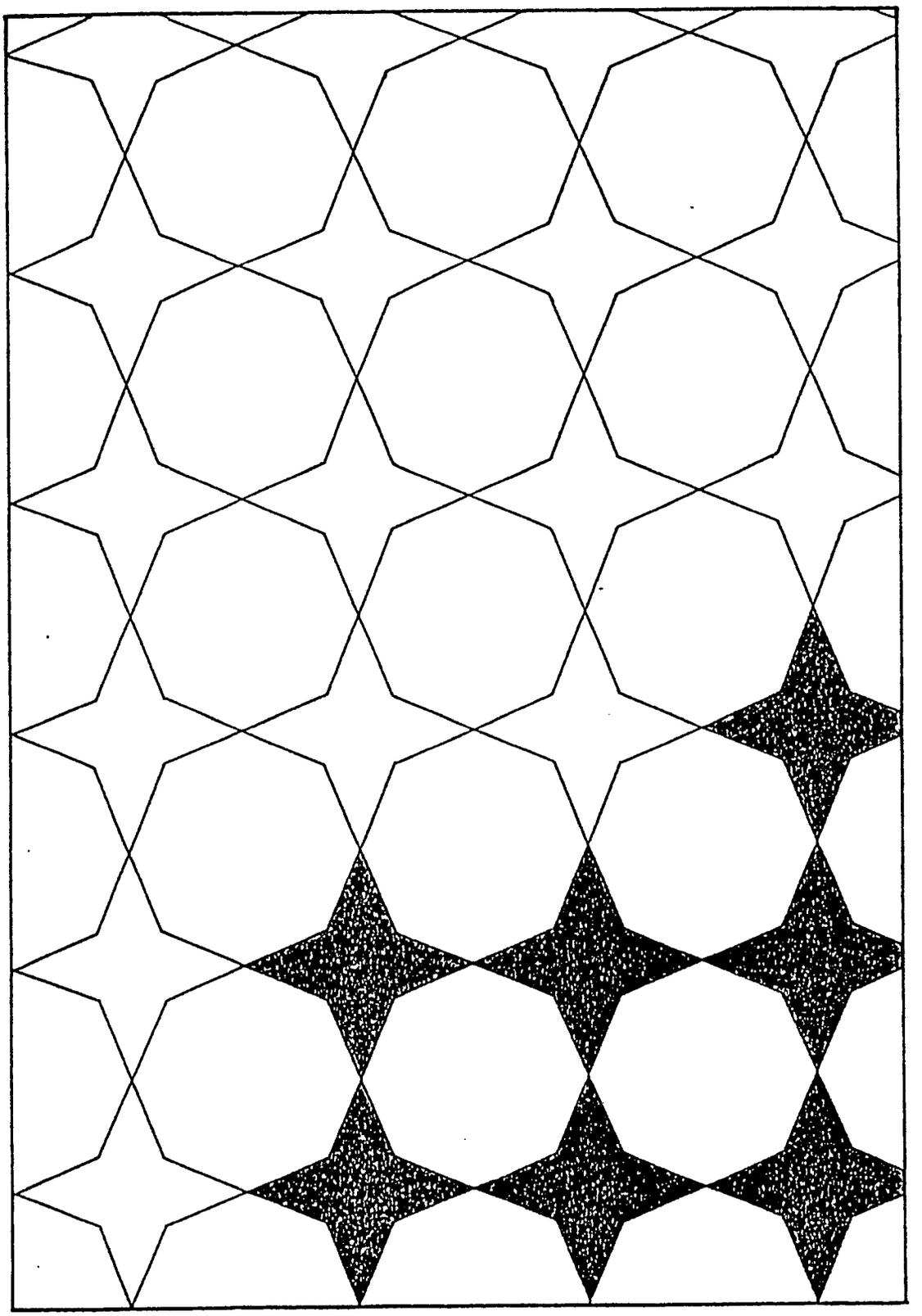

Fig. 9

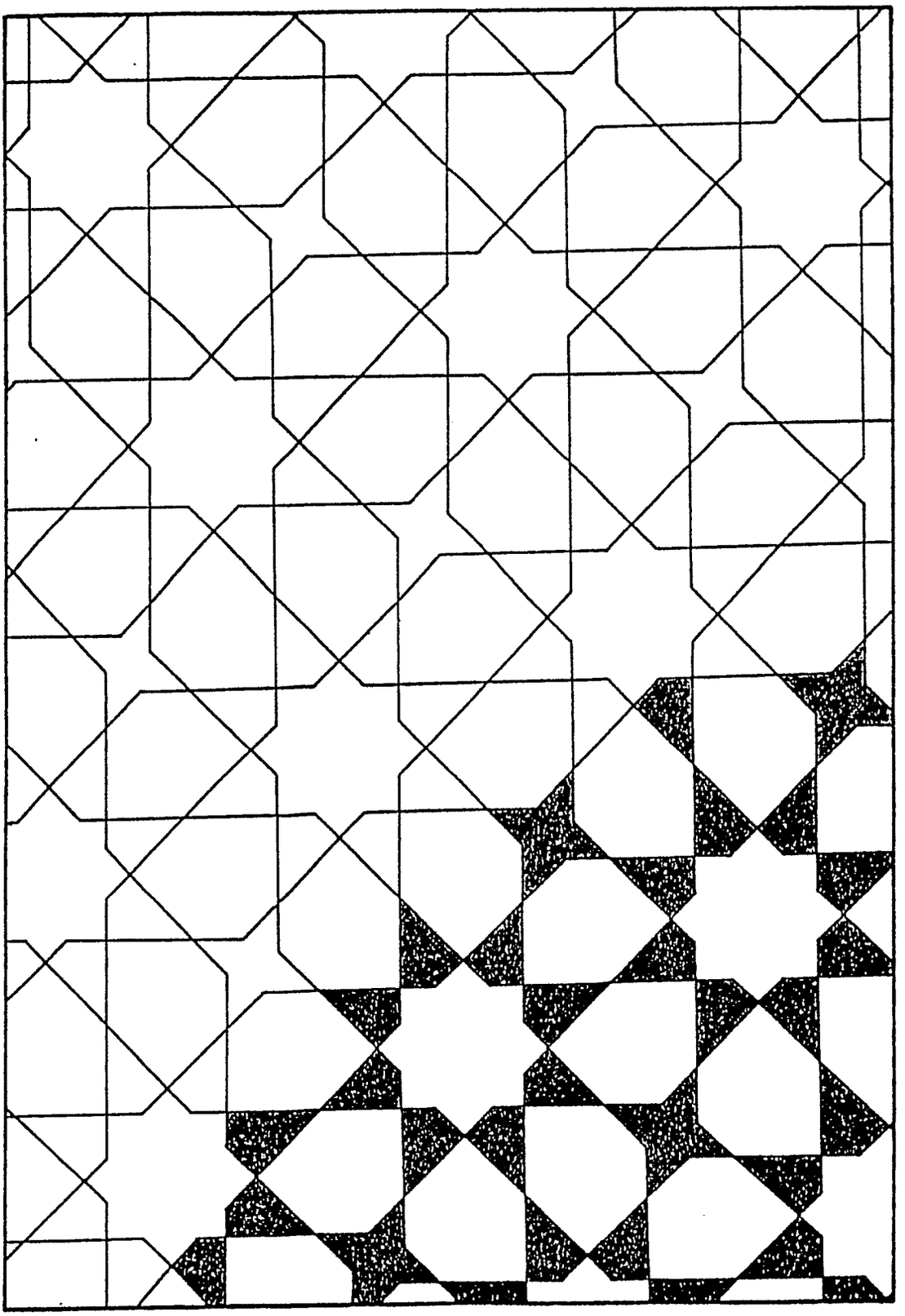

Fig. 10

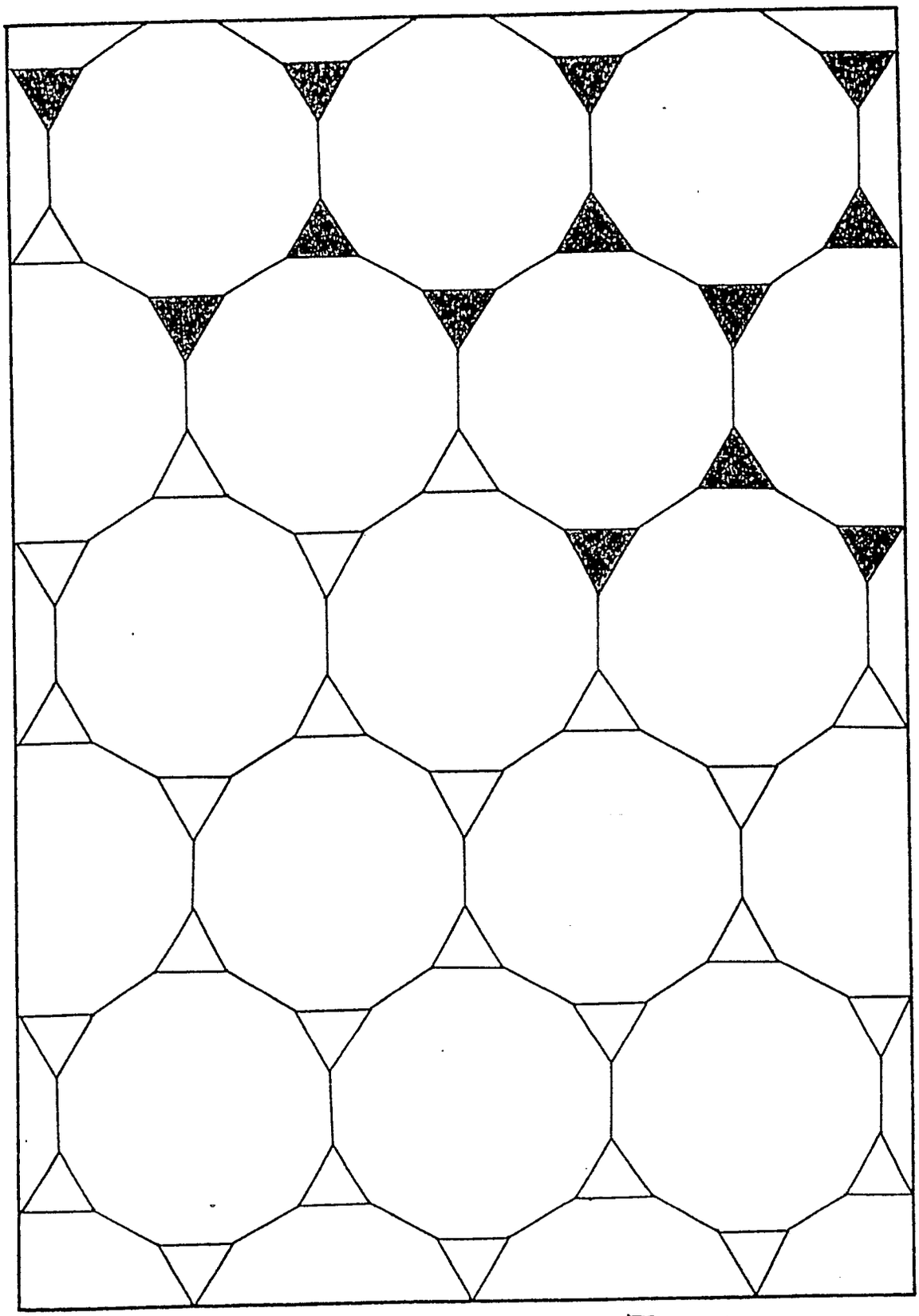

Fig. 11

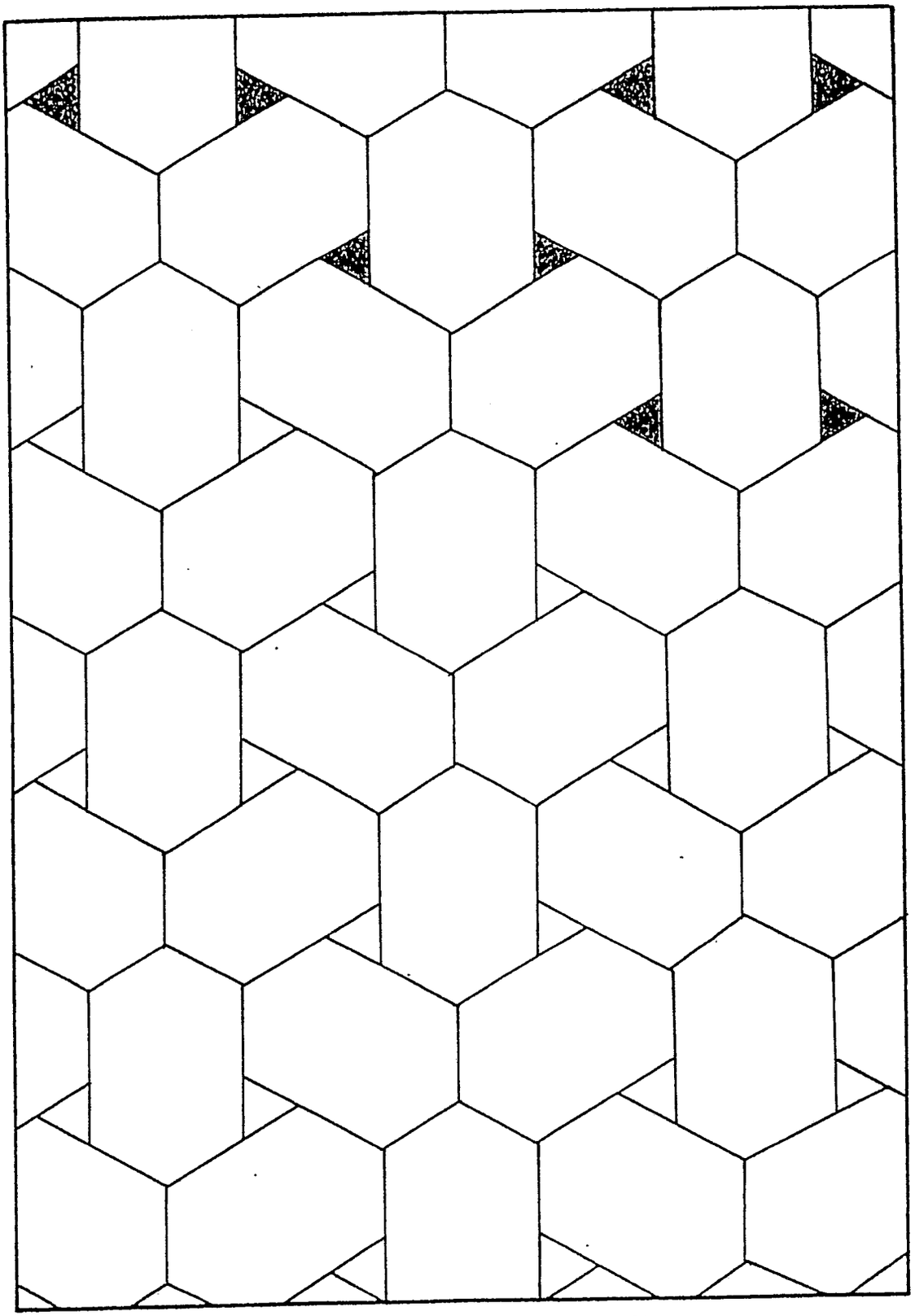

Fig. 12

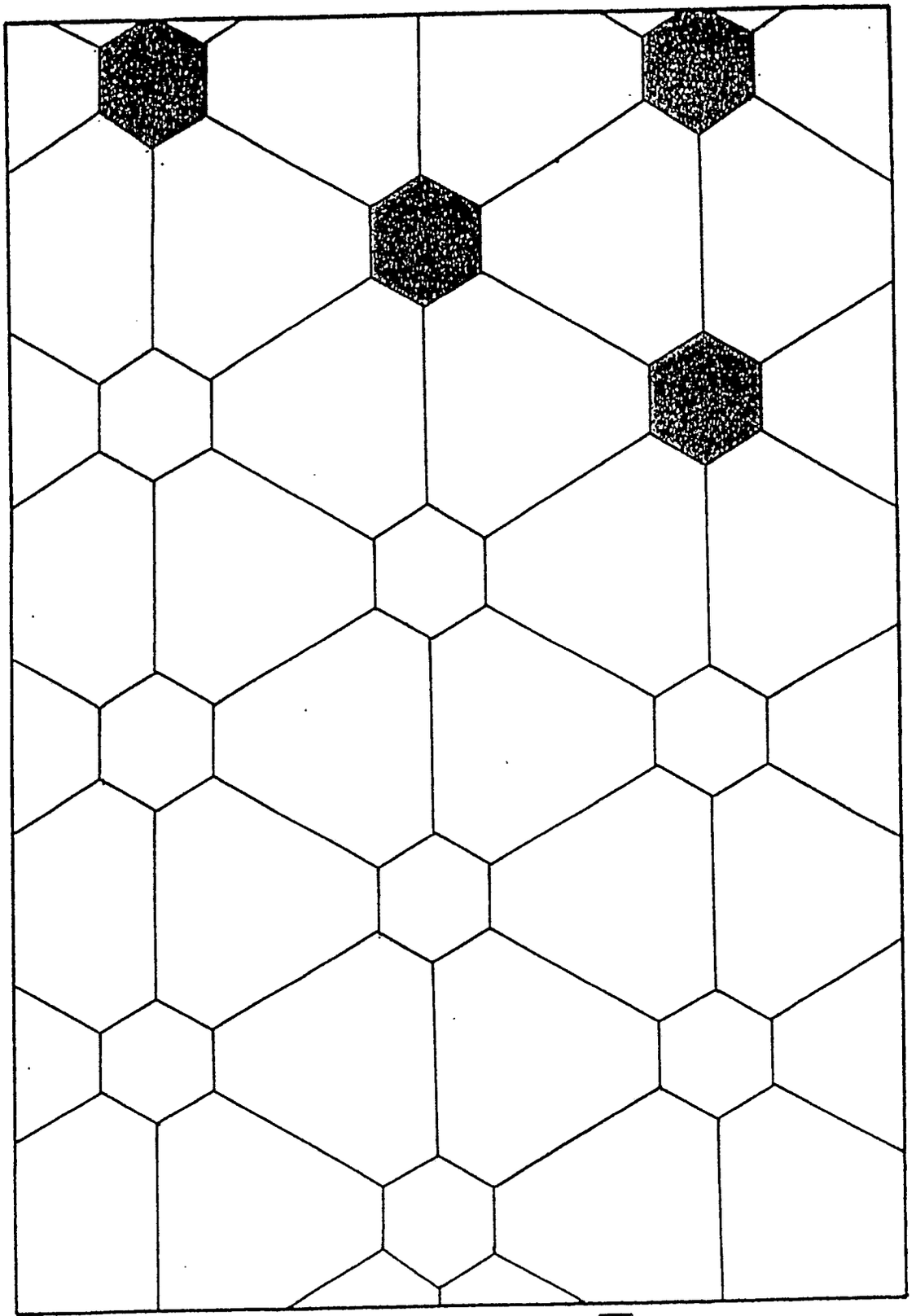

Fig. 13

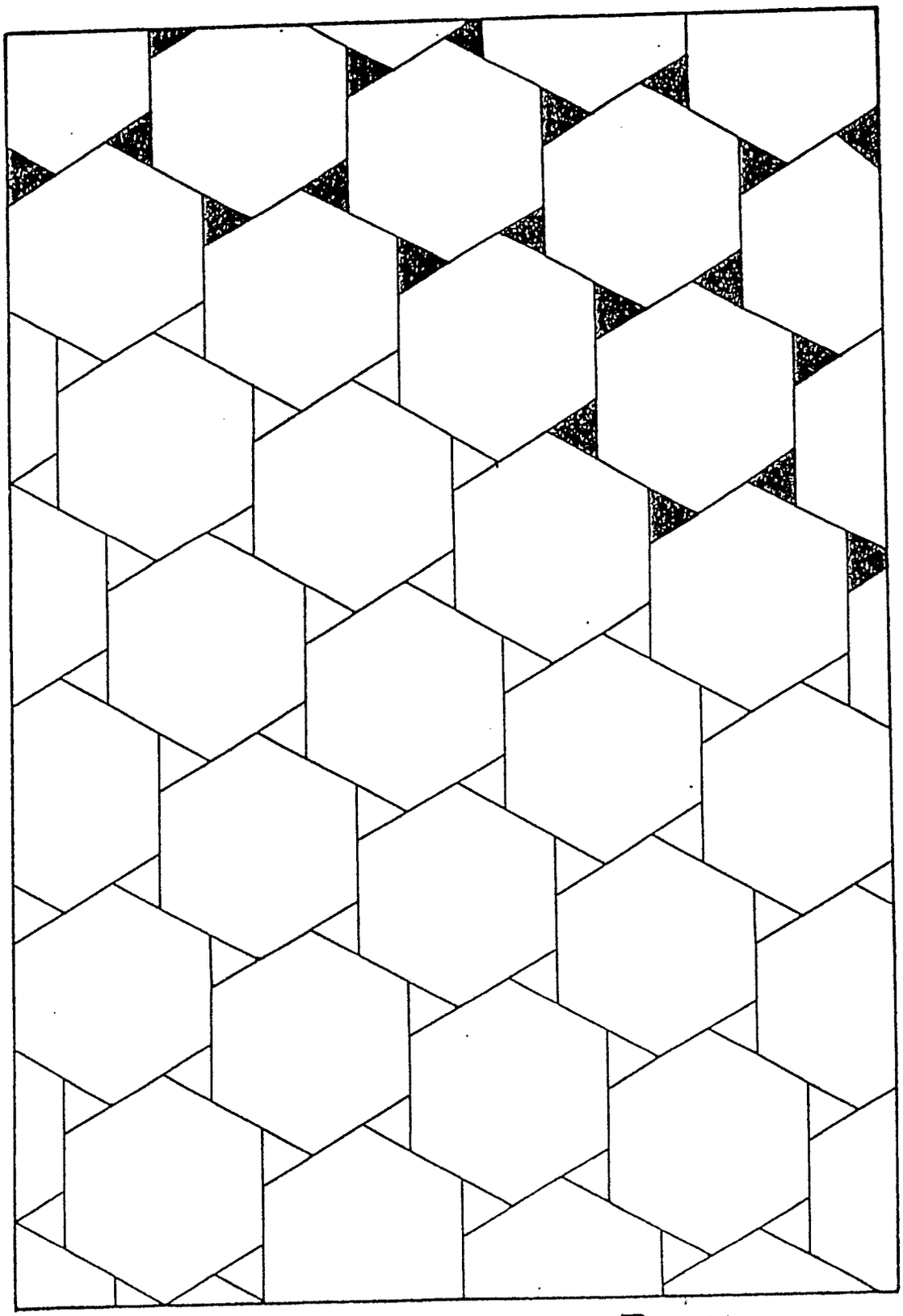

Fig. 14

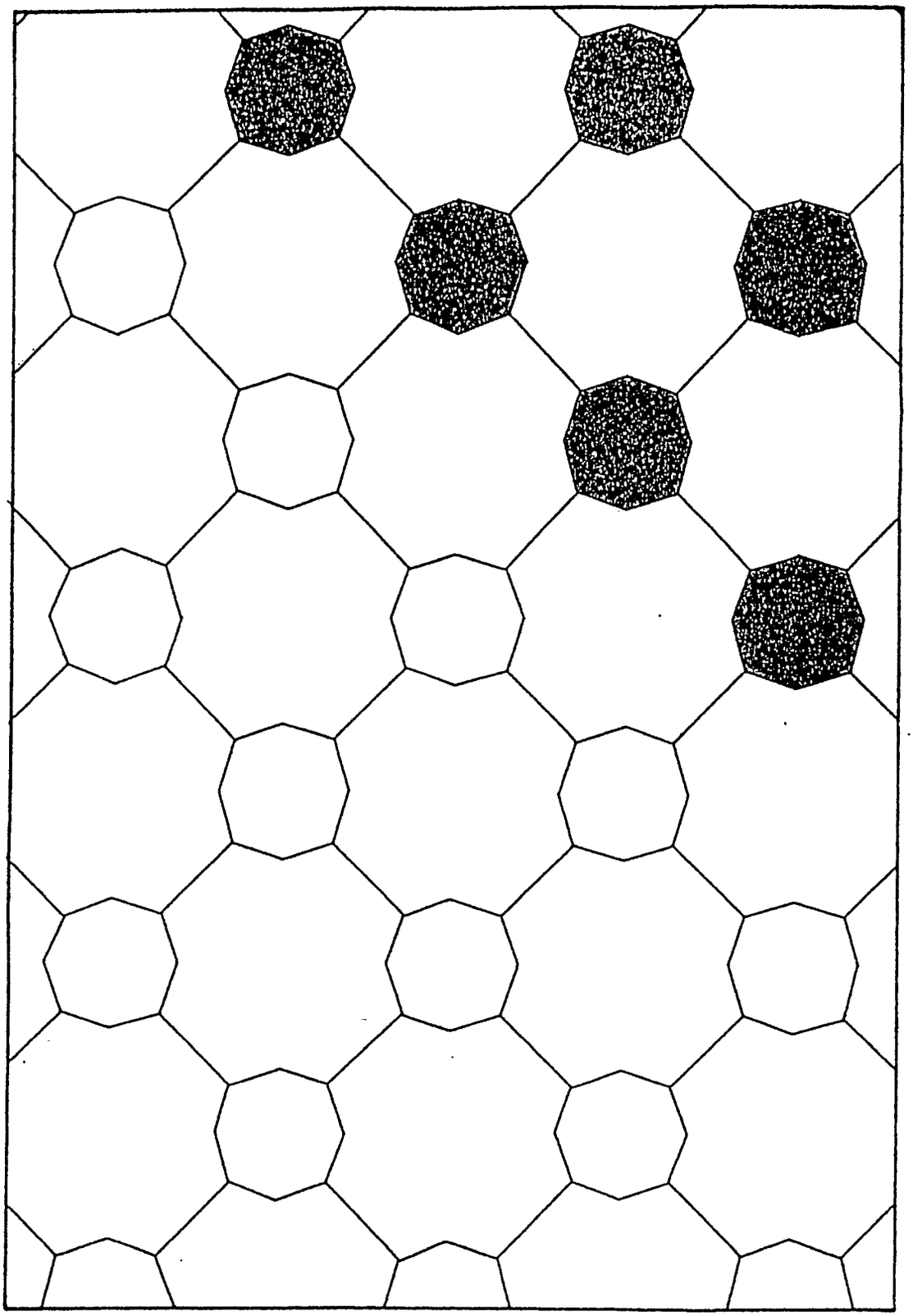

Fig. 15

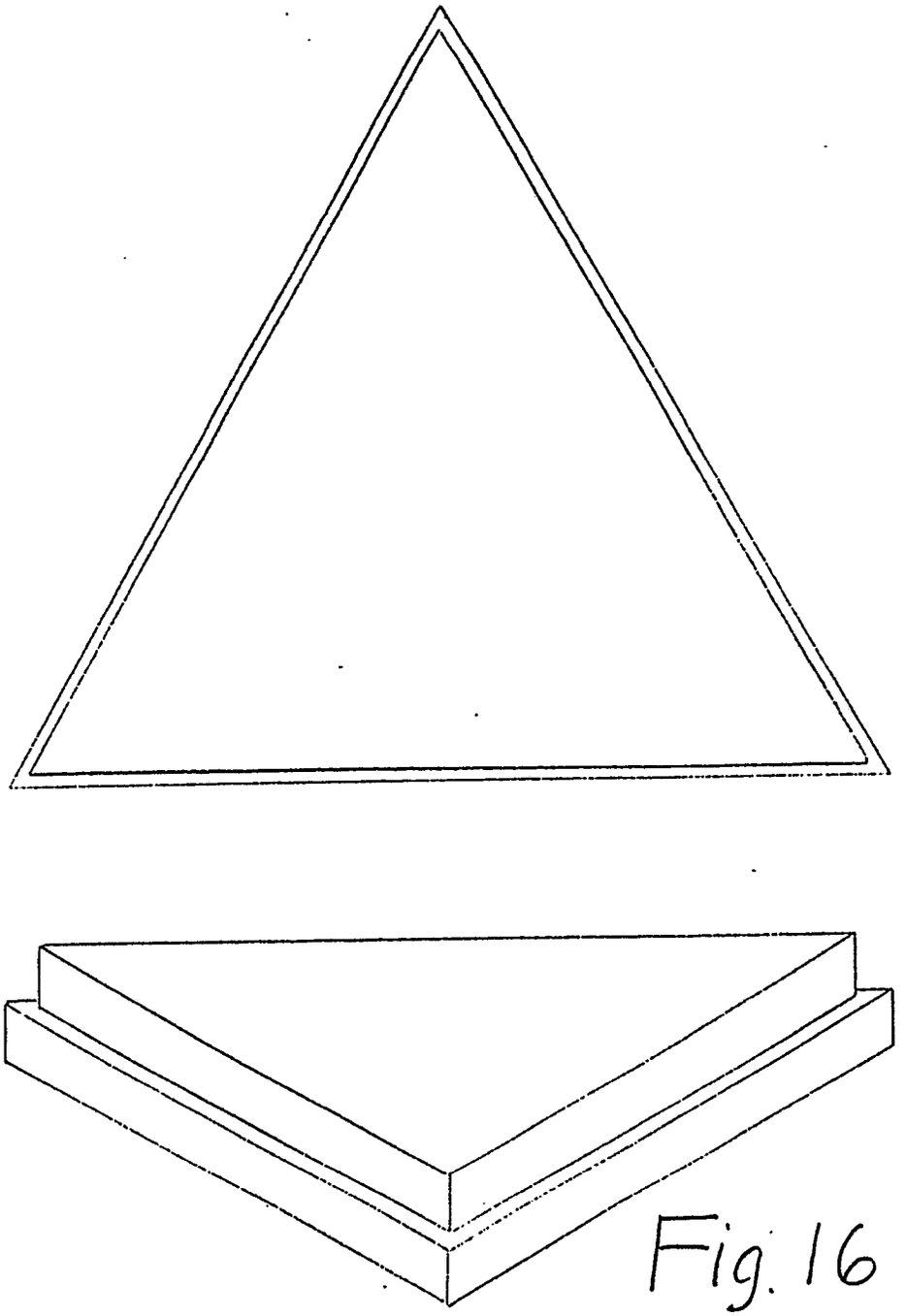

Fig. 16

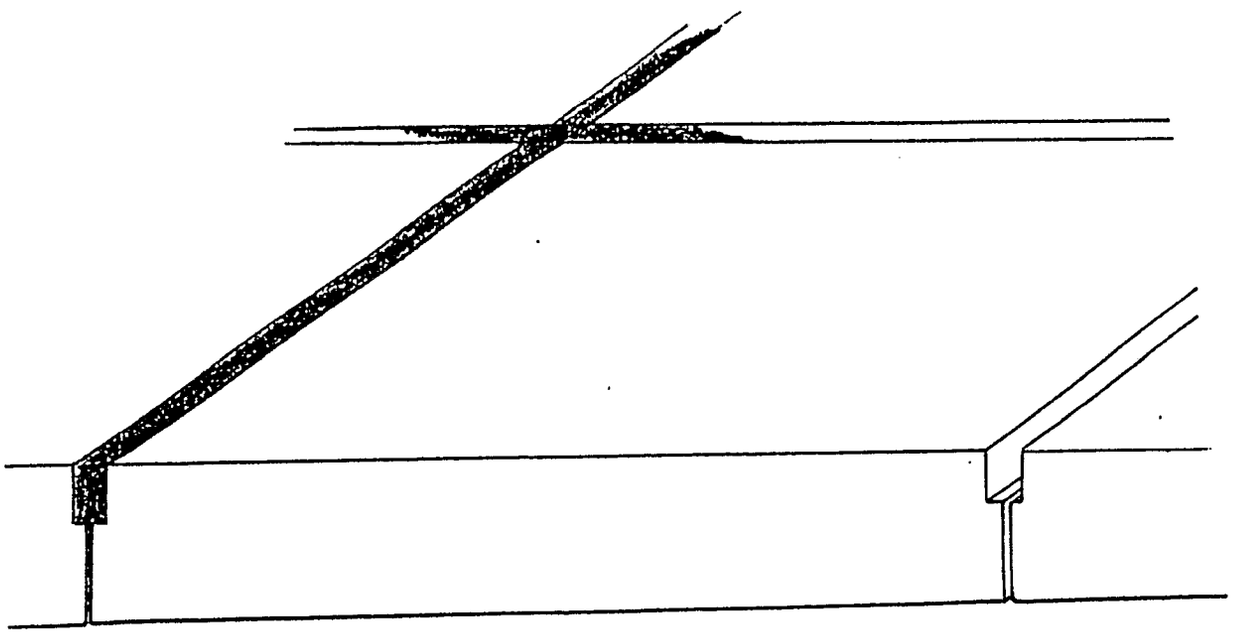

Fig. 17

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 87 11 2725

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.4)
Y	GB-A- 551 857 (HAWORTH) * Page 2, line 94 - page 3, line 58; figures 1-5 *	1,2.	E 04 F 15/08 B 44 C 3/12
A		9	B 44 C 1/28
Y	FR-A- 820 235 (PRODUITS CERAMIQUES DE MAUBEUGE) * Page 1, lines 30-50; page 2, lines 26-91, line 100 - page 3, line 31; figures 1,2 *	1,2	
A	DE-C- 462 556 (KRANER) * Page 1, lines 1-72; figures 1-11 *	1-3,7	
A	GB-A- 433 742 (CAMILLO CHIESA & FIGLIO) * Page 1, line 72 - page 2, line 112; figures 1-30 *	1,3,4,5	
A	DE-A-3 020 893 (LÖSCH) * Page 4, line 1 - page 7, line 20; figures 1-10 *	1,4,6,7	
A	FR-A- 772 777 (PRODUITS CERAMIQUES DE MAUBEUGE) * Page 2, lines 3-53; figures *	1,8	TECHNICAL FIELDS SEARCHED (Int. Cl.4) E 04 F B 44 C
A	GB-A- 454 971 (SMITH) * Page 2, lines 54-119; figures 1-4 *	1,2,9	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	21-04-1988	AYITER J.

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 (P0401)