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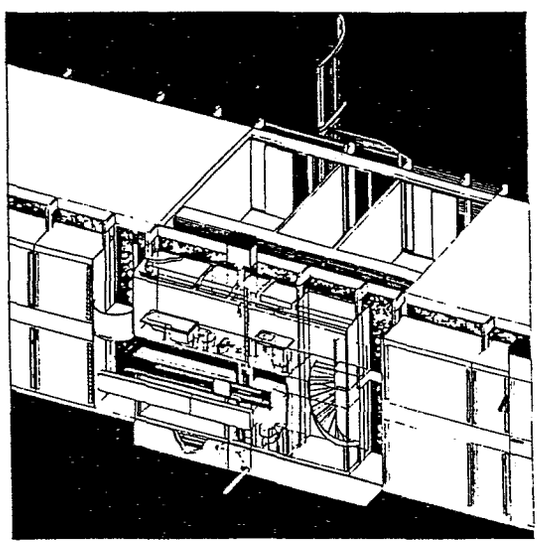
(54) **Contruction system for a dwelling together with a dwelling built in this way.**

(57) A construction system for a dwelling, such as a prefabricated dwelling or office is built up from a supporting structure filled up with purpose-units. The supporting structure consists of columns positioned at two opposite sides of the construction somewhat spaced outside the facade. The purpose-units are always mounted between two adjacent columns.

The distance between the columns and consequently the relative dimension of the purpose-units, varies between a number of values accruing from small to big according to the terms of a series of the FIBONACCI-type.



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Brief Description: Construction system for a dwelling together with a dwelling built in this way.

The present invention relates to a construction system for a dwelling, such as a residential dwelling or office, built up from a supporting structure comprising columns, girders, floor sections and facade elements, whereby the columns are arranged at some distance outside the flat facade elements and whereby furthermore specific purpose units such as kitchens, bathrooms, w.c.'s etc. are provided. In actual practice various construction systems are already known which aim at providing a cheap method of building so as to reduce the real estate costs. Although this resulted in some reduction in price, at the same time considerable monotony as introduced so that during building little or no consideration could be given to the purchasor's requirements.

The present invention aims at providing a construction system which on the one hand can lead to a considerable reduction in costs, and which secondly permits a very wide variety of variation, without it being necessary for the builder to keep in stock or to have specially made a large number of different elements. This aim is achieved in accordance with the invention in that the columns are present only on two opposing facades of the dwelling, in that each purpose unit is always located between two columns, and thereby at the same time performs the function of facade elements, and in that the spacings between the columns appertain to one and the same facade, also the width of the floor sections, and the dimensions of the facade elements expressed in one and the same unitive length result in a number of numerical values which together form terms in a series of the FIBONACCI-type.

The advantage obtained with this construction system is two-fold. Firstly it becomes possible to obtain an independent supporting structure which forms the constructional backbone of the system, the said structure being made up of columns and the floor sections. Right from the outset these elements can be produced without being influenced by the location or the purpose

for which they will be subsequently employed. The same applies to the facade elements and the "purpose units" and furthermore to the auxiliary units fastened to the facades. The second advantage is connected with the application of the dimensional system in accordance with a FIBONACCI series, the advantages of which for use in certain applications have already been described in the previous patent application 7415158. As a result of employing this dimensional system only a limited number of elements need to be kept in stock, whilst the number of possible combinations is extremely wide and consequently purchasor's requirements can be complied with to a considerable extent.

The invention is especially typified in a dwelling obtained using the construction system described above. In such a dwelling each purpose unit is designed as an open box which is fastened between two columns and which is provided with supply pipes and conductors for gas, water and/or electricity, together with a sewage main. The facade consists on one side of the dwelling of a number of spatial facade elements by means of which a kitchen, bathroom, shower area, washroom and the like can be formed. The rest of the facade concerned, together with the remaining facades can be built up from flat facade elements.

The invention will be discussed in greater detail with the aid of a large number of drawings which provide an oversight of the large number of possibilities and of some more detailed projects.

Sheet 1 illustrates in extremely schematic form, in perspective, a dwelling consisting of two storeys in which the construction system is illustrated. The supporting structure comprising a number of columns which are provided with a number of cantilevers which project inwardly level with the floors. A girder with a Z-shaped cross-section for supporting the floor sections, the upper face of which is level with the upper edge of the cantilevers, rests on a pair of adjacent cantilevers. The mutual spacing between the columns is governed by the choice made by the purchasor of the dwelling concerning the arrangement of the house, particularly the dimensions of the purpose units in which the sanitary and other facilities are provided.

Fig. 2 illustrates the possibilities which exist with regard to the purpose units, whereby the various dimensions can be regarded as terms from a FIBONACCI series. The same diagram illustrates a staircase element and a W.C extending across two storeys.

Concerning Fig. 1 and 2 which have just been mentioned, it can be pointed out that each dwelling rests on two foundation strips which run in parallel and always have the same cross-section. The load-supporting column structure is attached to this foudation. The fact that the columns proceed in parallel and have a fixed cross-section makes it easy to set out the site, check the dimensions and to provide the foundation system. The loading on the foundation strips is fixed, per linear metre, because the span of the floor bays and thus the prescribed loadings are already known. The columns are erected at distances which are governed by the requirements imposed by the site requirements and the wishes of the residents, as already described. The different dimensions are got up in accordance with a series of the FIBONACCI-type. By this means it is possible, employing a minimum number of differing spacings, to obtain a maximum of different sub-divisions, see Fig. 2, together with Fig. 6-9 which will be described in the following. The columns are located beyond the edge of the floor sections so as to permit independent location of the floor elements, columns and facade elements.

The purpose elements shown in Fig. 2 are pre-fabricated in the factory. It is possible here to employ standard sanitary and piping material, together with standard kitchen units. Pre-fabrication extends up to the assembly and connection of all sub-components such as baths, shower trays etc. and the provision of wall apertures and pipe connections. As a result of the provision of wall apertures, the box-shaped purpose units which are produced otherwise from neutral standard components are provided with a demonstrable function, but if so these can be mounted at any point on the facades between two columns.

The pipes of a purpose unit are provided upon a plate or pipe bulkhead, see Fig. 15. Assembly is undertaken by installing the corresponding bulkhead and fastening the pipes by means of quick release couplings or screwed couplings. If necessary this

can also be carried out using hoses. The said pipes are designed for water, gas and sewage purposes. These are always located in the area reserved for this purpose directly underneath the purpose units. Fig. 15 likewise shows that at the side of or inside a technical purpose unit a shaft is provided on the vertical running of pipes and exhaust gases and for ventillation. This is the only point in the system where an aperture is made through a roof, which reduces the risk of leakage.

Fig. 3 illustrates a number of auxiliary units which can be attached to the facade opposite the purpose units. These auxiliary units can consist of a balcony, a bay window, a plant greenhouse, a porch, a corridor and/or staircase, a conservatory, a sun awning, a windshield, a terrace or a gallery. A hybrid solution is also feasible in which one of the facades is made up from purpose units and one or more auxiliary units.

The cupboards for the dwelling are accommodated in a boxed zone which is directed transverse to the floor sections, as can be seen in Fig. 4-7. This boxed zone also contains electrical and heating/ventilation facilities. The zone can be accessed and is exploitable from two sides. In these boxes there is a conductor duct located above door level so that no wall apertures are required. These conductors can be consequently included in the prefabrication stage. As can be seen in Fig. 4 between the boxes there is a conductor space which can be employed for connecting up plug sockets, switches and ventilation apertures.

For the sake of completeness Fig. 8 provides a schematic view of the floor widths to be employed and the construction of these floors from only two different types of floor components of differing widths, the dimensions of which comprise part of the FIBONACCI series which forms the basis of the dwelling concerned. Fig. 9 illustrates a number of embodiments of flat sites with the supporting structure employed here comprising four or five columns. This Fig. 9 illustrates how many variations are feasible in spite of the limited number of basic elements or purpose units which are available in prefabricated form.

Figs. 10 and 11 provide extremely schematic illustrations of fairly compact structures obtained using the system in accordance with the invention, i.e. a complete dwelling which is built up only from prefabricated components whilst retaining a very large range of variations which can be introduced without increasing costs.

A more refined embodiment of the bungalow type is shown in Figs. 12 and 13. Fig. 12 provides a frontal view and a plan view, whilst Fig. 13 provides a more detailed perspective view in combination with a slightly sloping roof construction with ventillation facilities which has been been employed. Fig. 14 again illustrates another embodiment of a dwelling consisting of two storeys whereby the top storey is provided with a great deal of balcony space. Fig. 15 provides a cut-away perspective view of a dwelling consisting of two storeys with a detailed representation of the sanitary facilities in the purpose units employed. Fig. 16 illustrates the design of a facade in which a large number of solar shelter elements are provided and where the technical purpose units are located on the rear facade face which is not illustrated.

C L A I M S

1. Construction system for a dwelling, such as a residence or office, built up from a supporting structure comprising columns, girders, floor sections and facade elements, whereby the colums are arranged at some distance outside the flat facade elements and whereby furthermore specific purpose units such as kitchens, bathrooms, W.C.'s etc. are provided, characterized in that the columns are present only on two opposing facade faces of the dwelling, in that each purpose unit is always located between two columns, and thereby at the same time performs the function of facade element, and in that the spacings between the columns appertaining to one and the same facade together with the width of the floor sections and the dimensions of the facade elements expressed in one and the same unit of length, result in a number of numerical values which together form terms in a series of the FIBONACCI-type.

2. Dwelling obtained with the construction system according to claim 1, characterised in that each purpose unit is designed as an open box attached between two columns, which is provided with supply pipes for gas, water and/or electricity, together with a sewage pipe.

3. Dwelling according to claim 2, characterised in that the incoming and outgoing pipes are fastened to a supporting plate which is located underneath the corresponding unit and to which the sanitary and other facilities are connected.

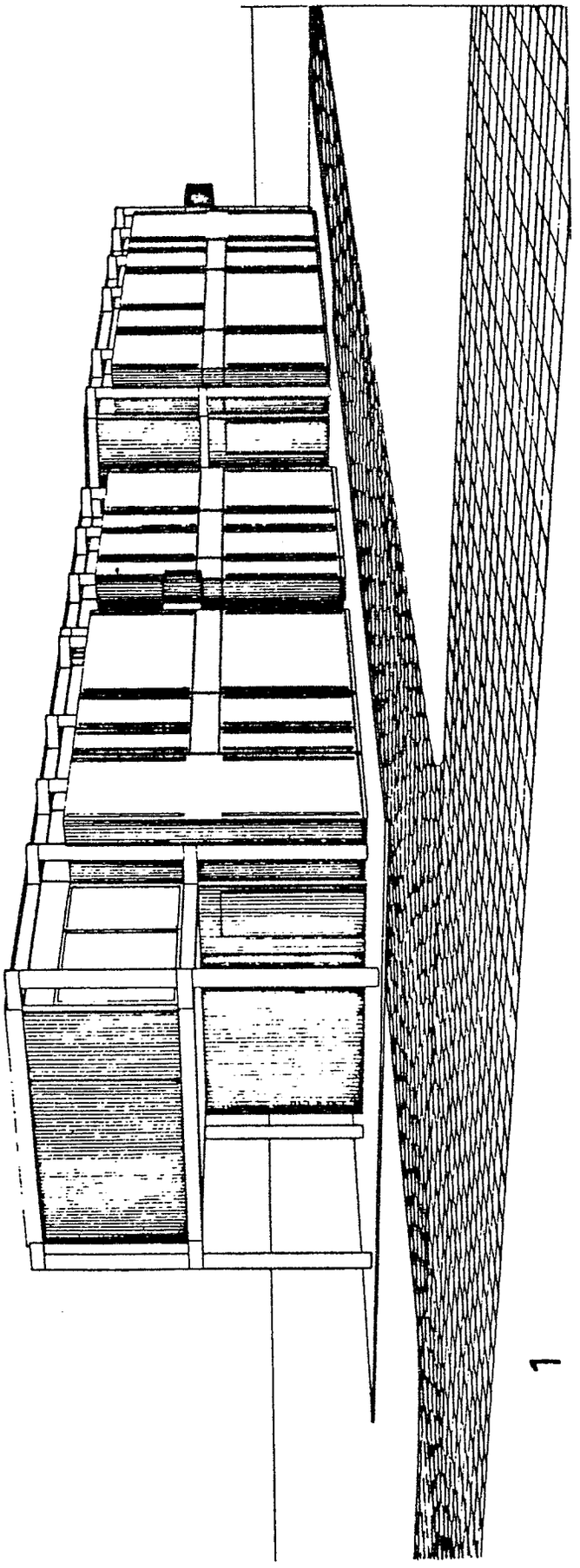
4. Dwelling according to claims 2 or 3, characterised in that the columns are provided with cantilevers, projecting towards the inside, which are level with the floors, whereby girders with a Z-shaped cross-section rest on these cantilevers so as to support the floor elements.

5. Dwelling according to any one of claims 2 - 4, provided internally with cupboards, characterised in that the cupboards are accommodated in a box zone which is transverse to the floor sections, the zone being accessible on two sides and

at the same time performing a separating function.

6. Dwelling according to any one of claims 2 - 5, characterized in that the electrical conductors in the purpose units and in the box zones are located above door height and are incorporated in a collecting duct with branching-off facilities.

7. Dwelling according to any one of claims 2 - 6, characterized in that a shaft is provided, at the side of or in a technical purpose unit, for the vertical transport of pipes and exhaust gases and for ventilation.



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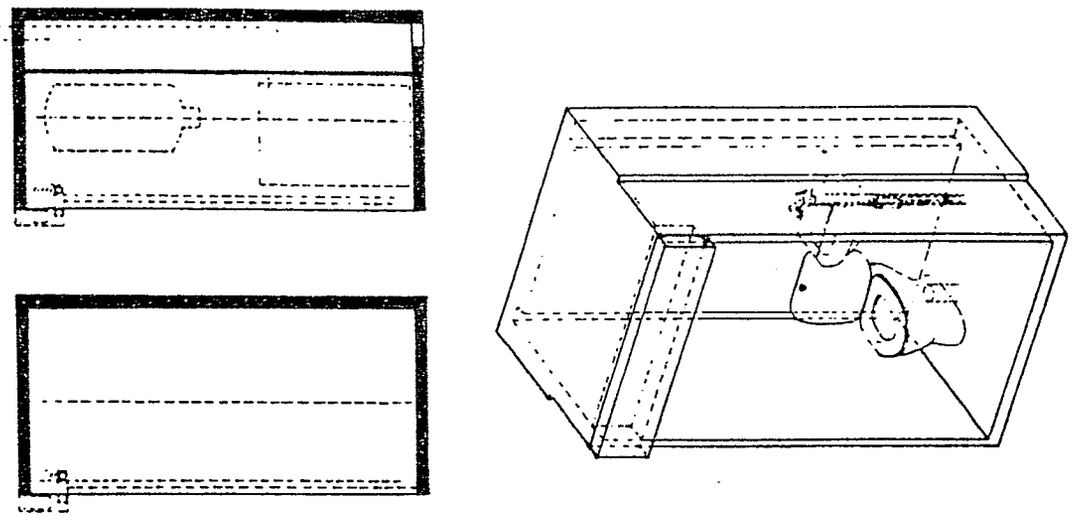

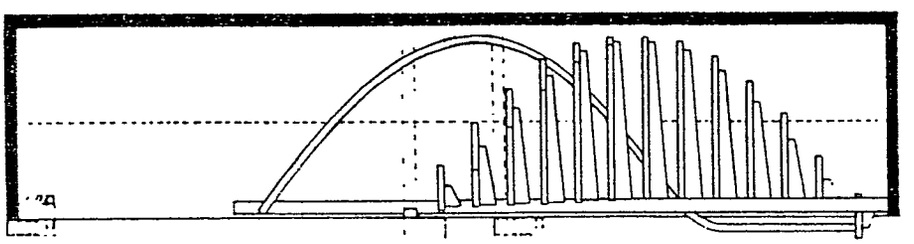

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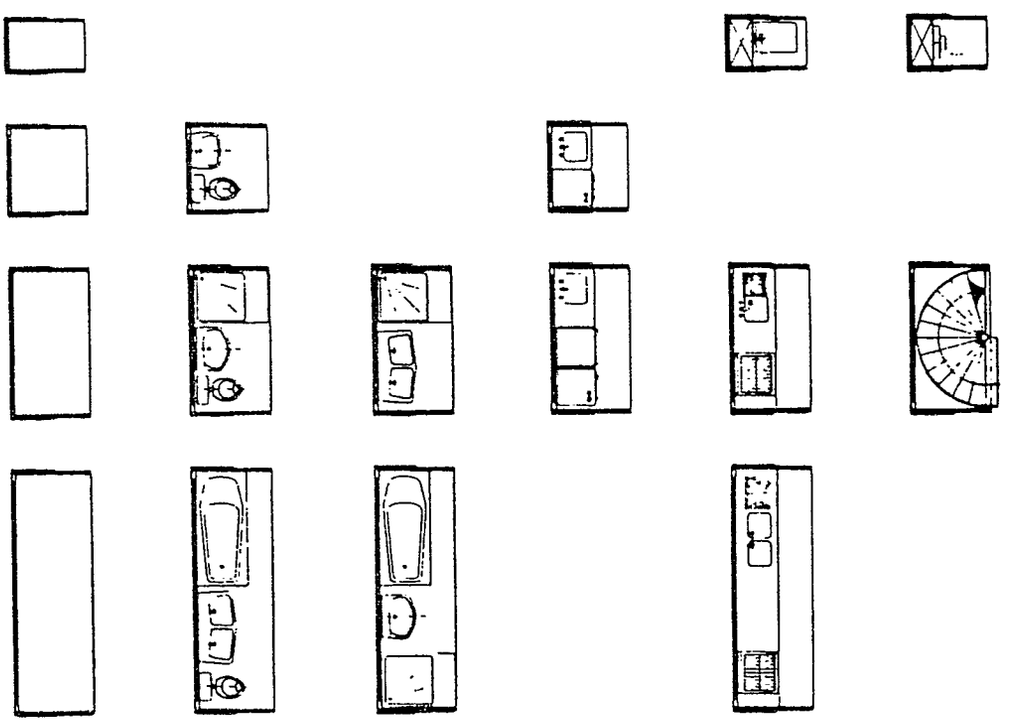

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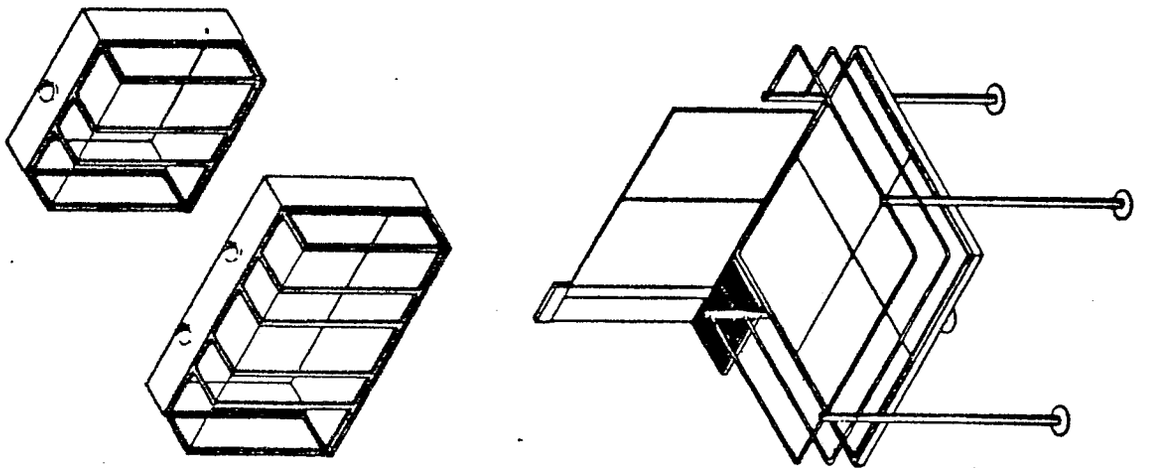

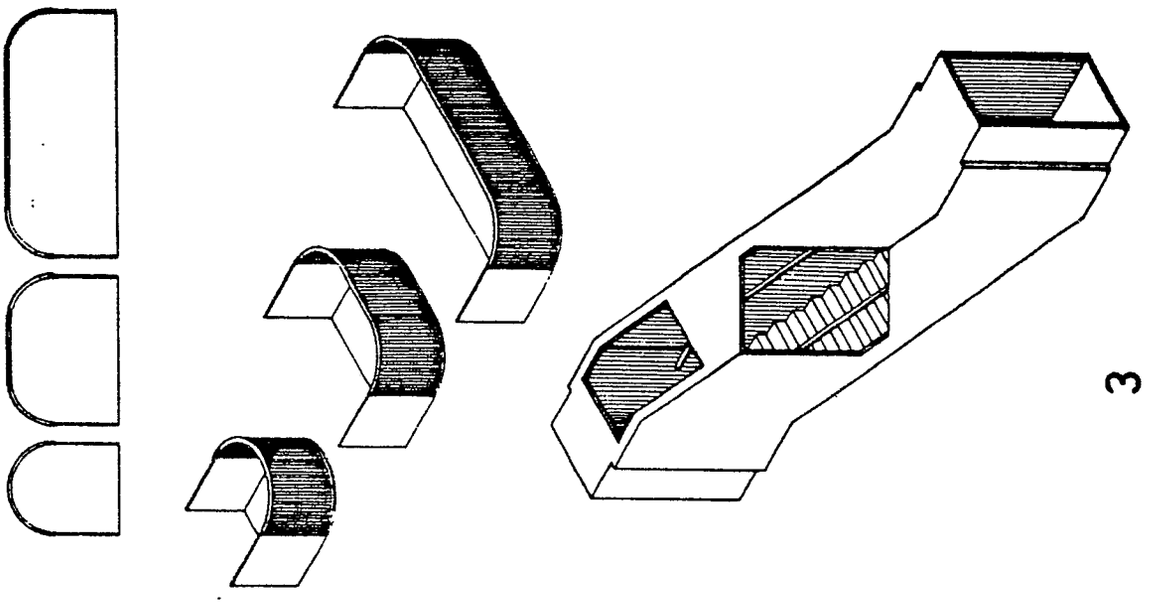

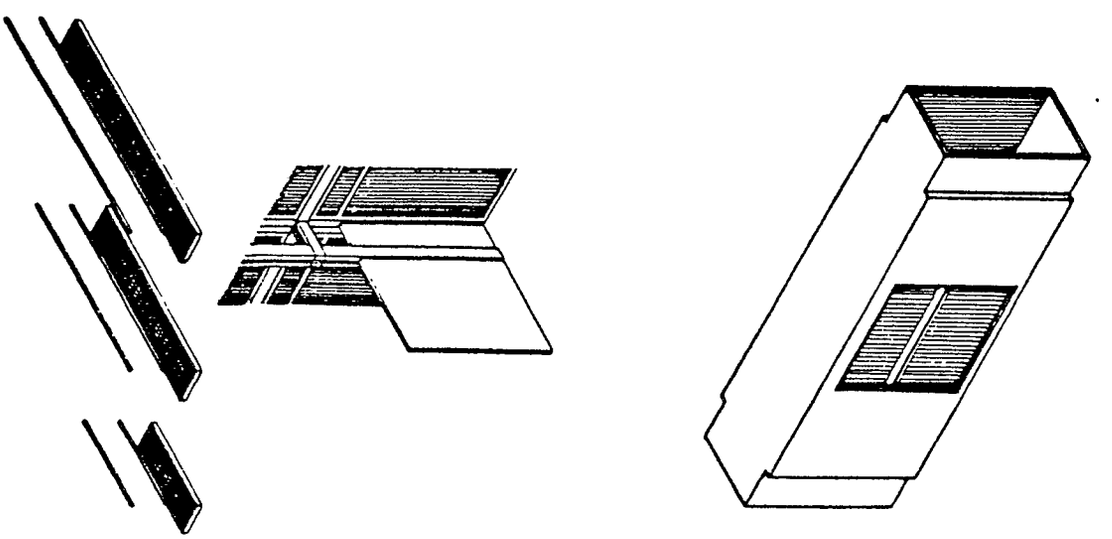

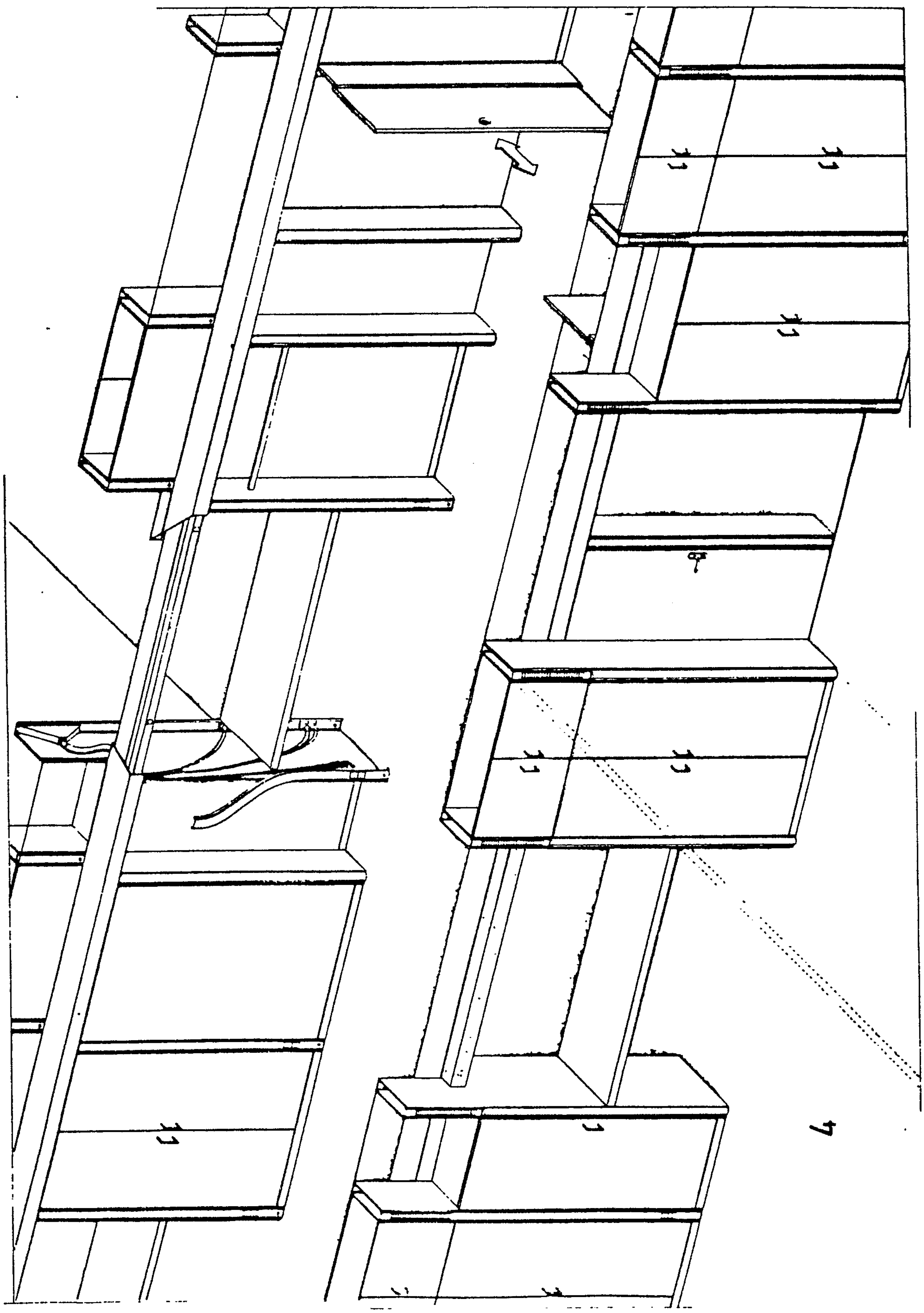

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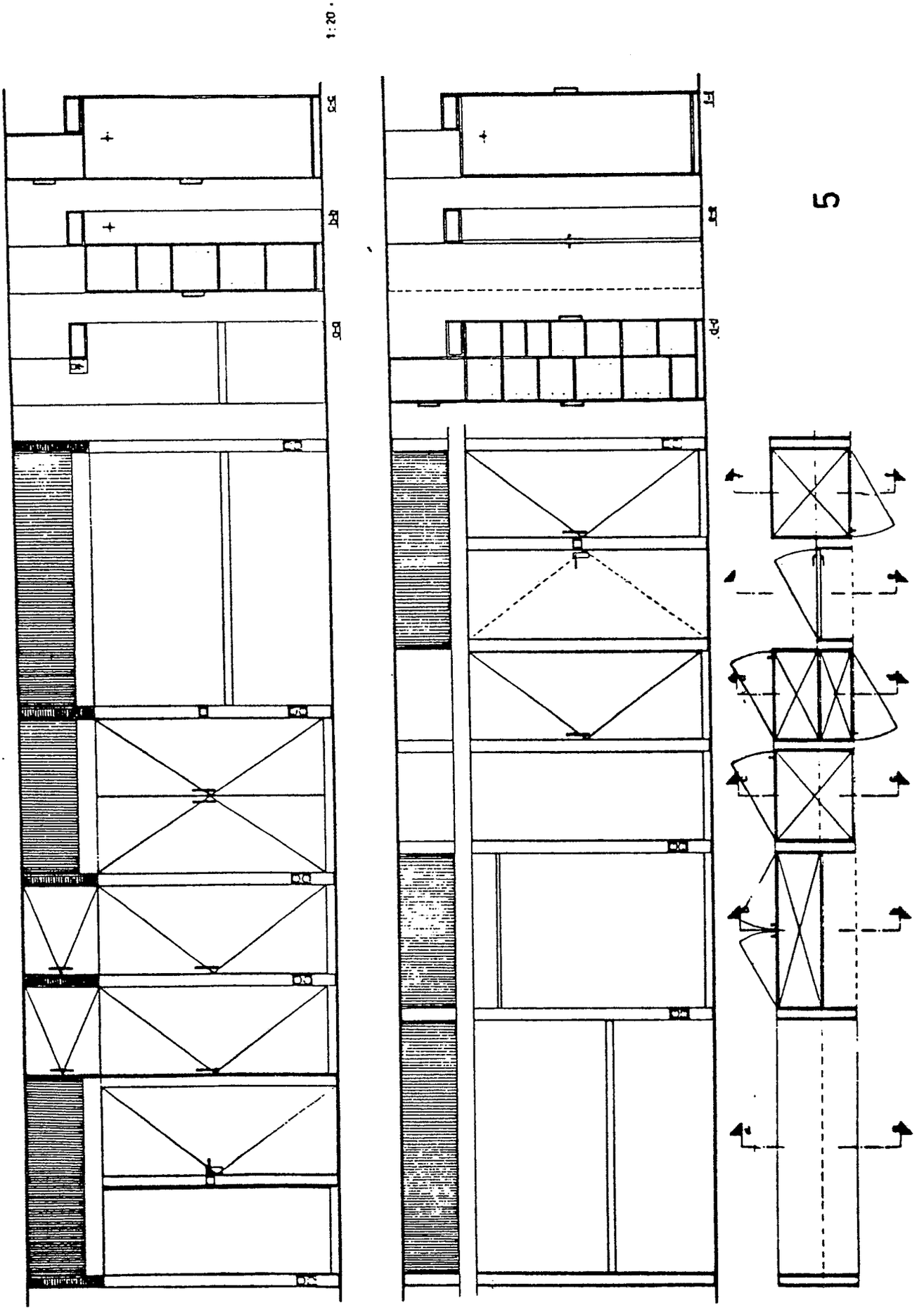

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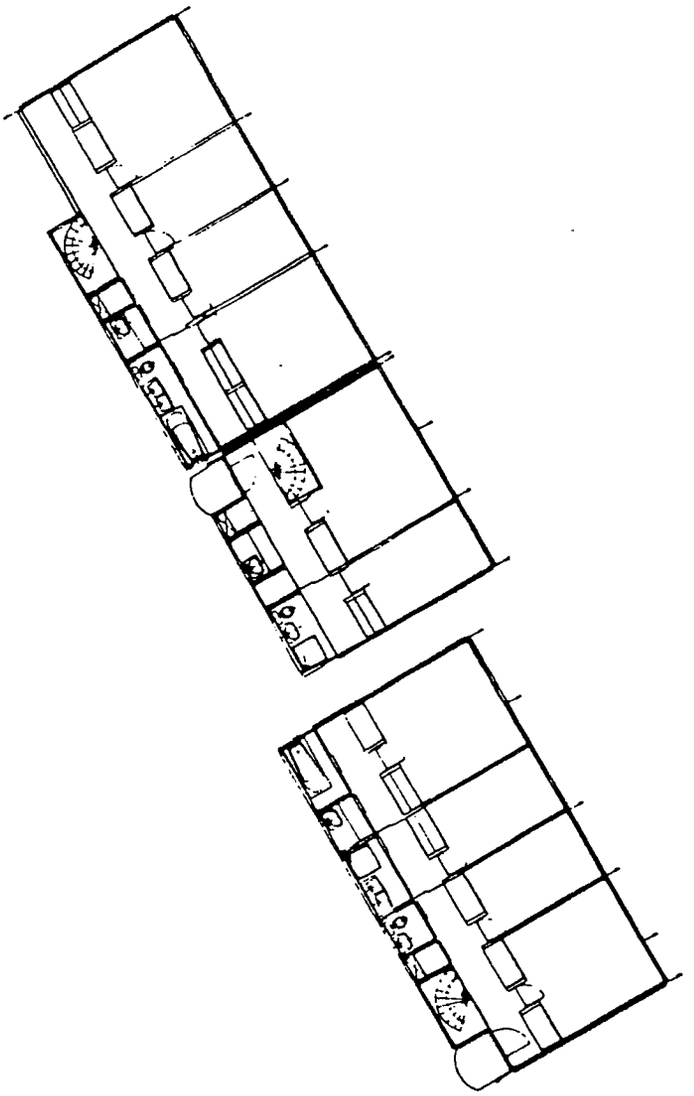

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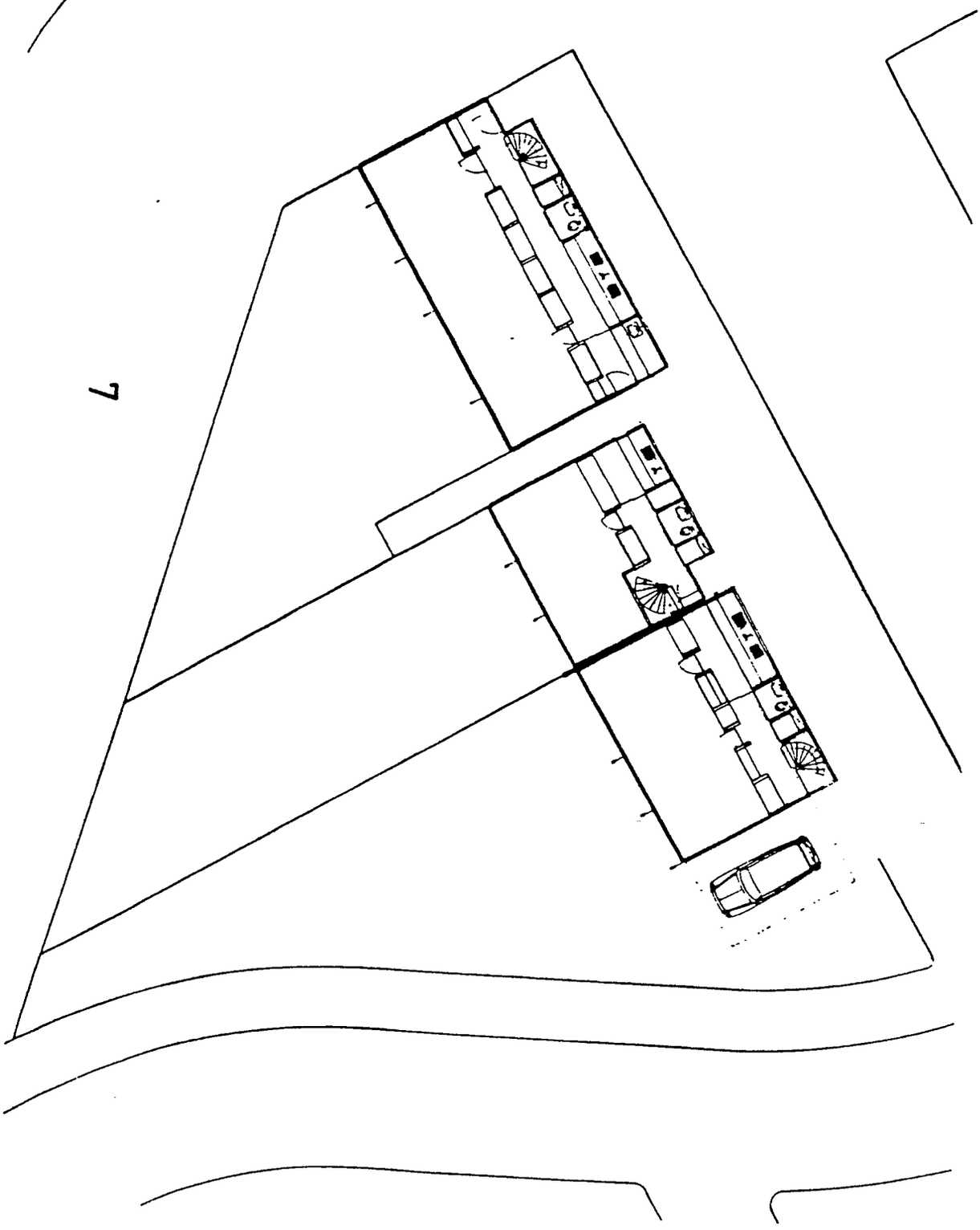

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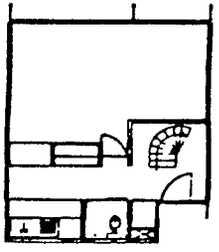

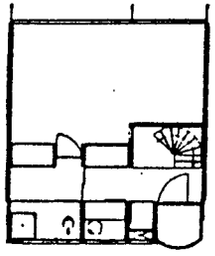

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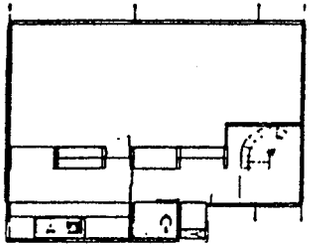

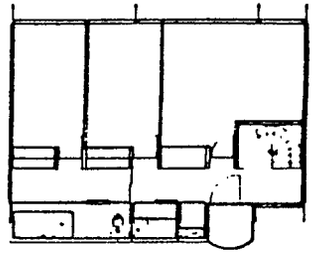

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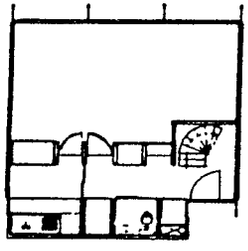

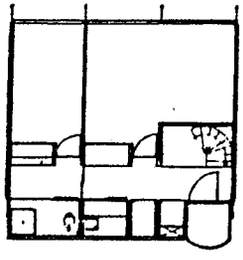

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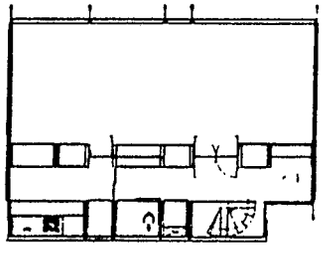

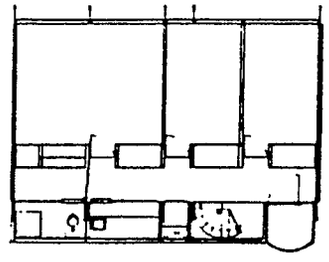

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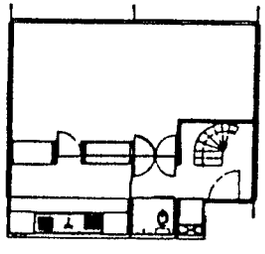

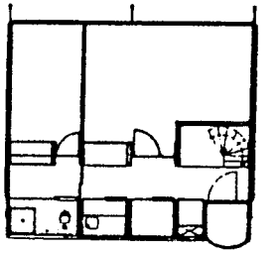

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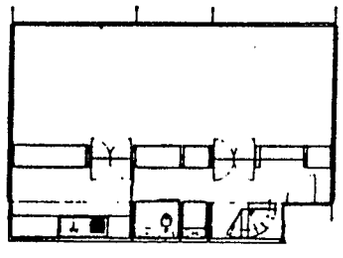

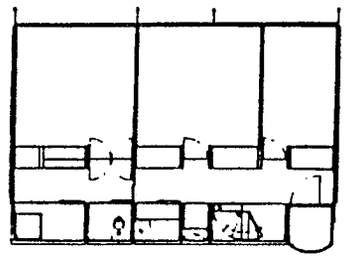

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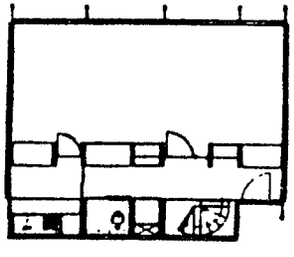

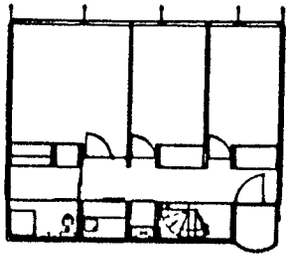

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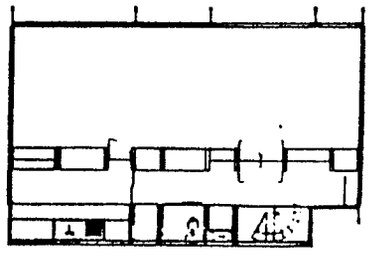

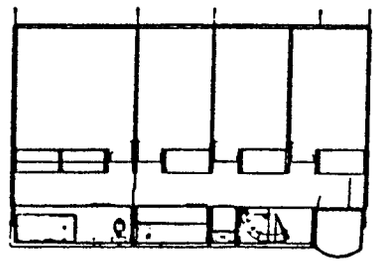

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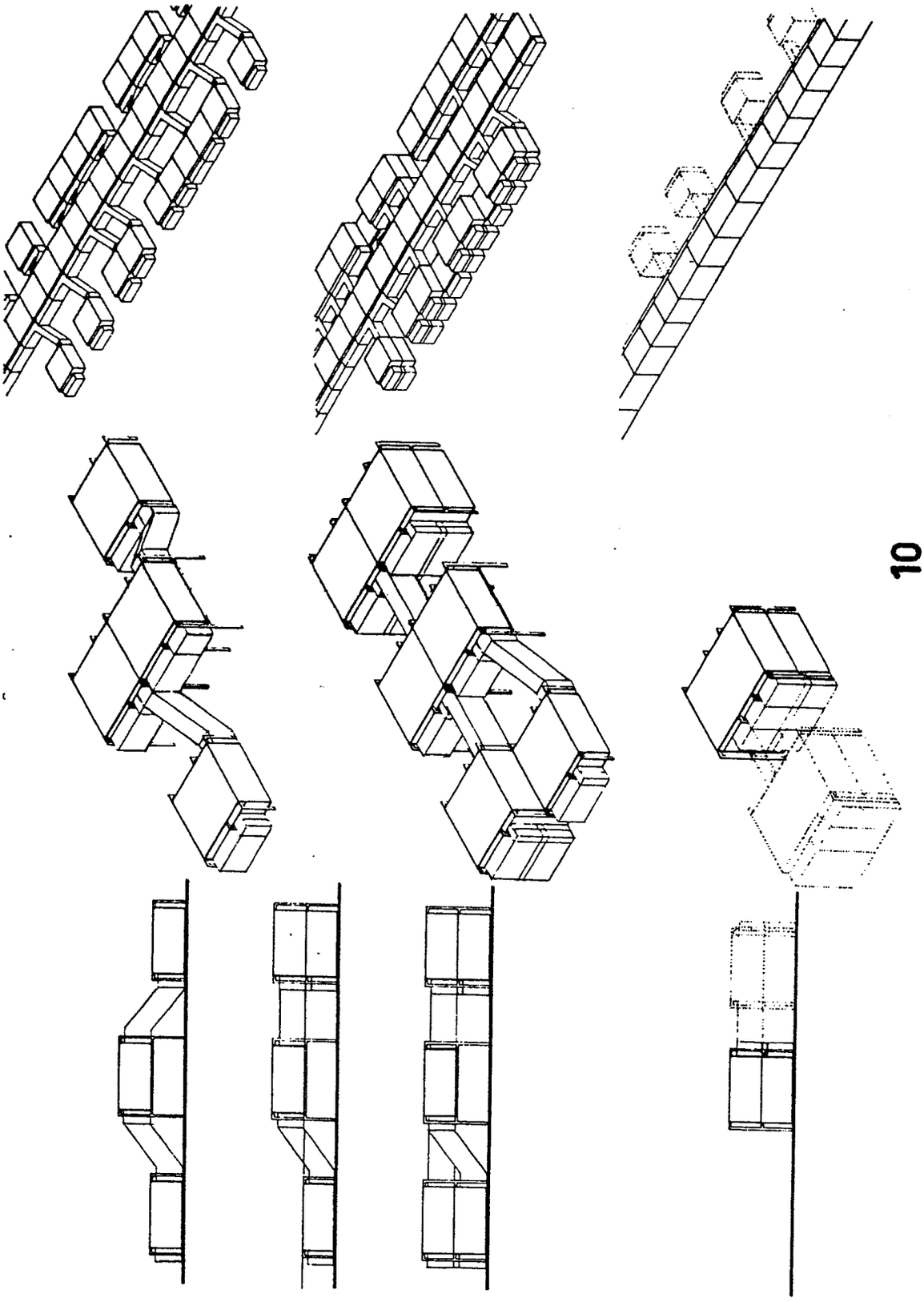

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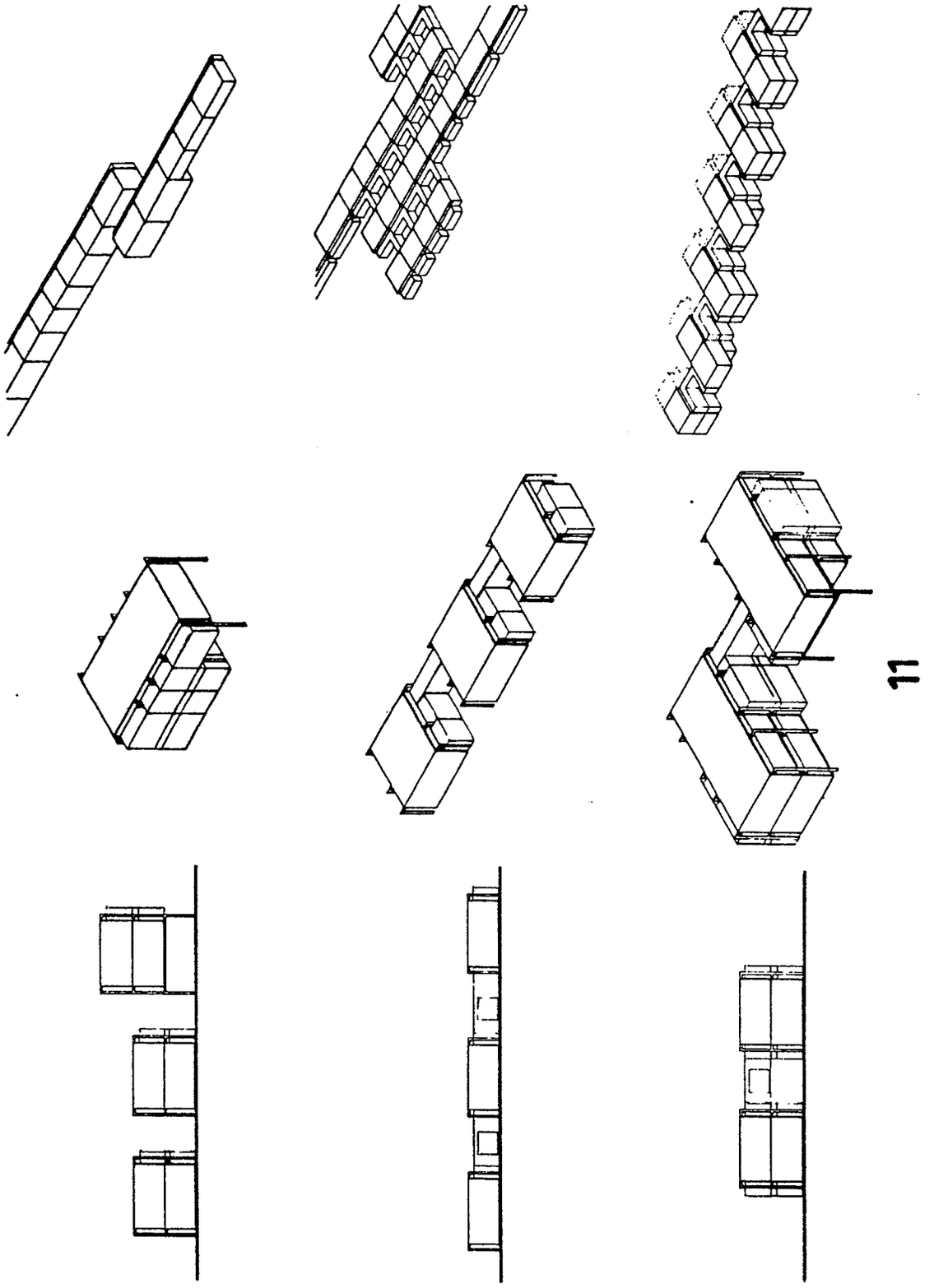

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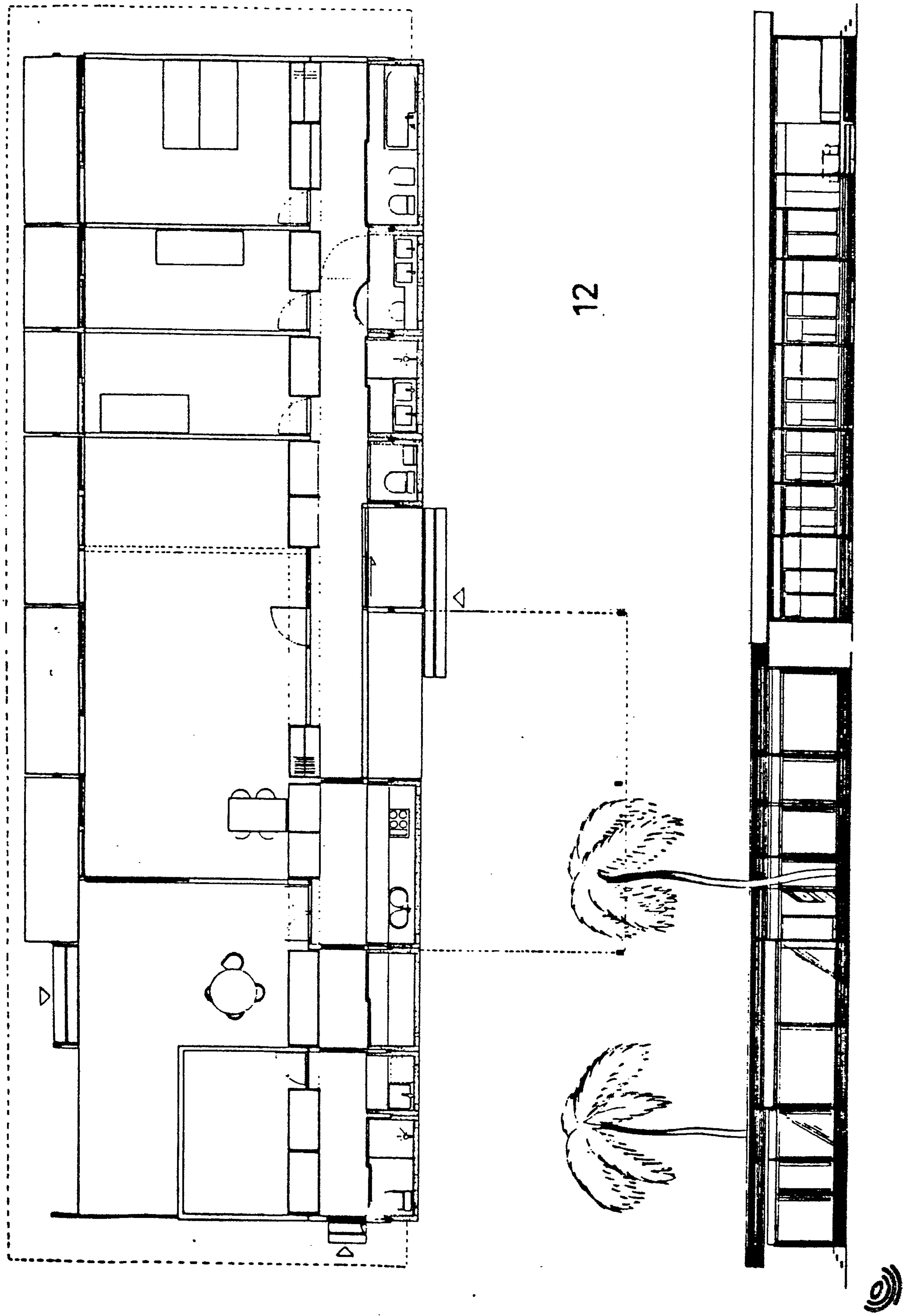

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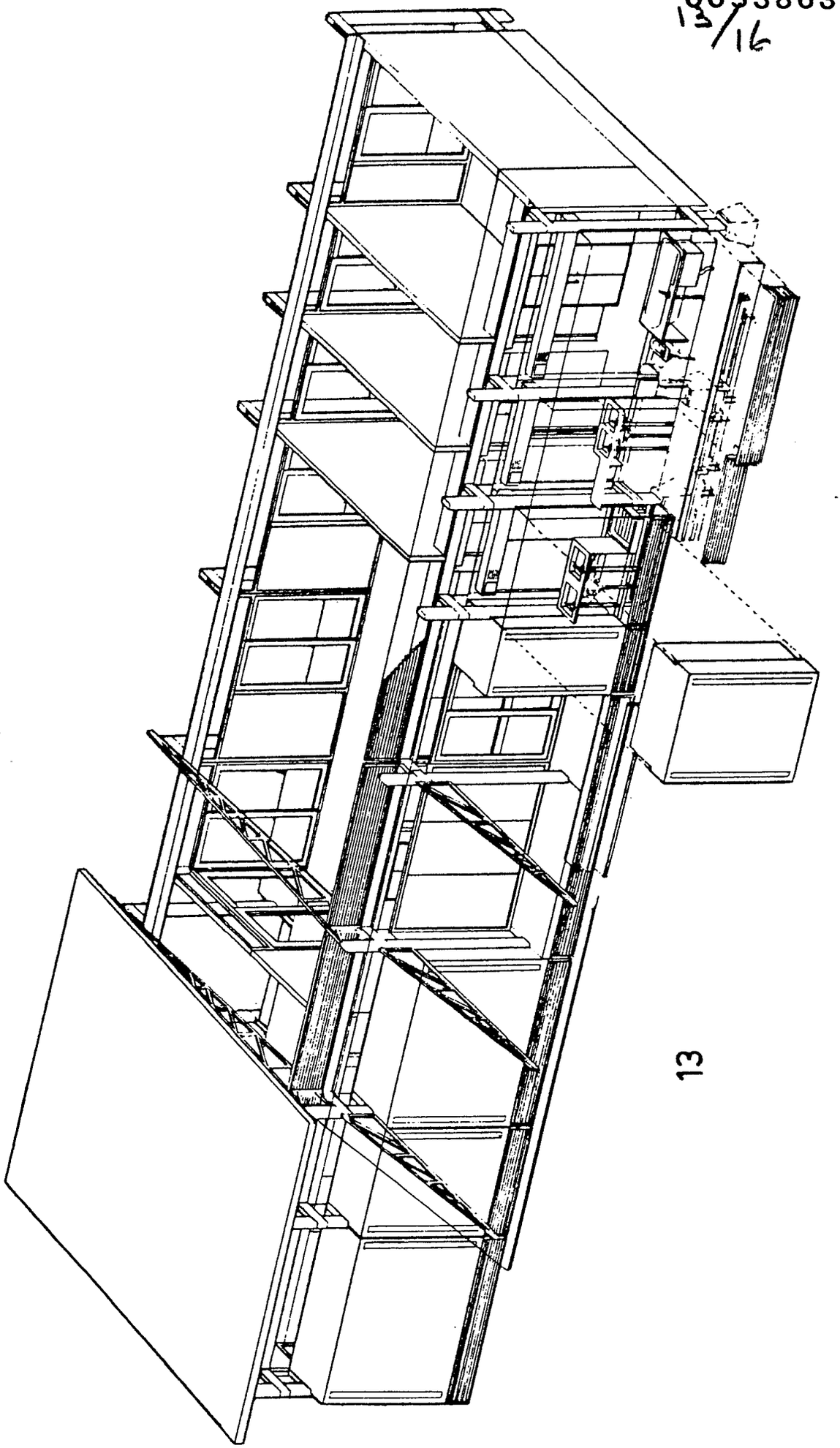

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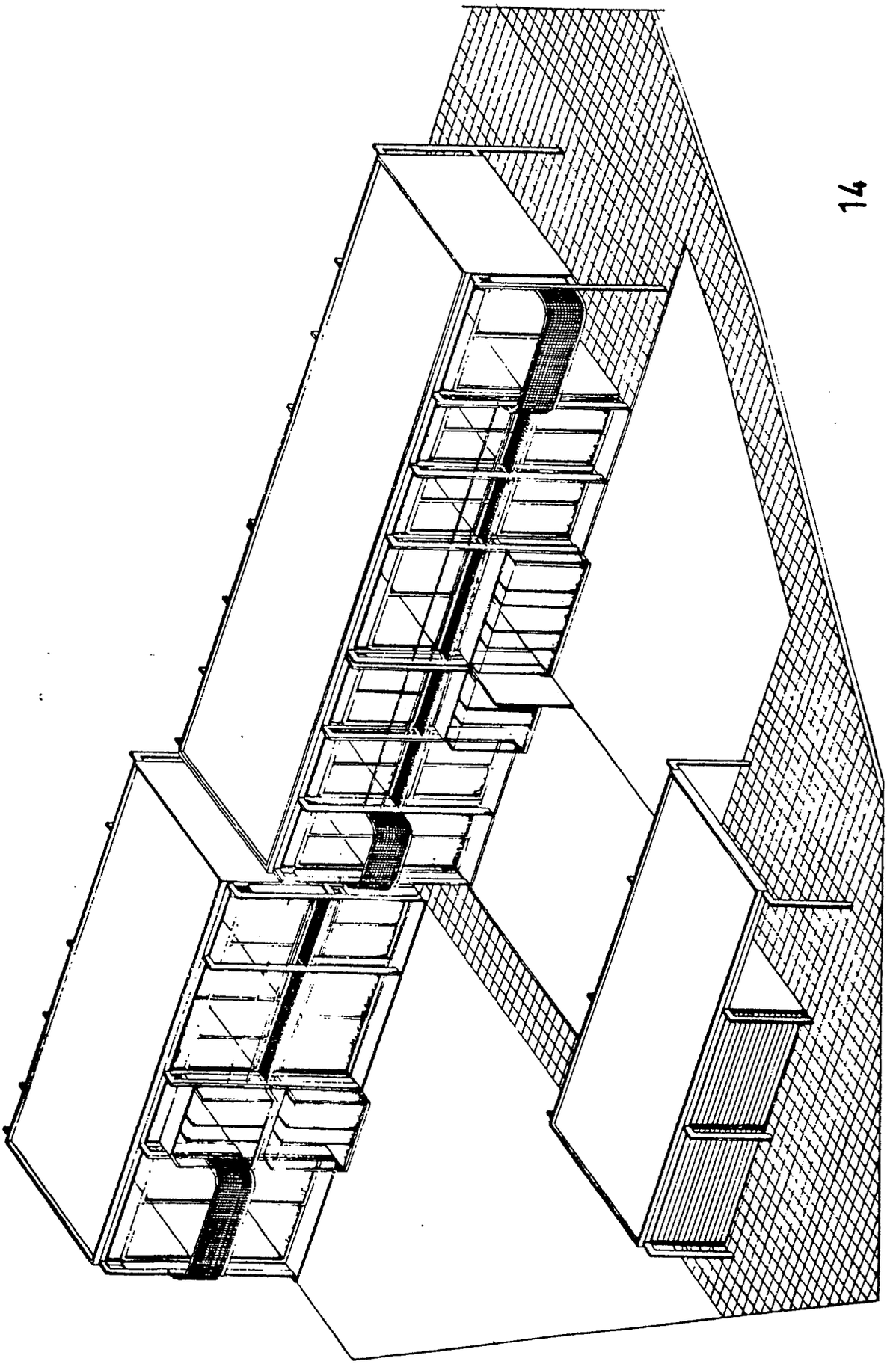

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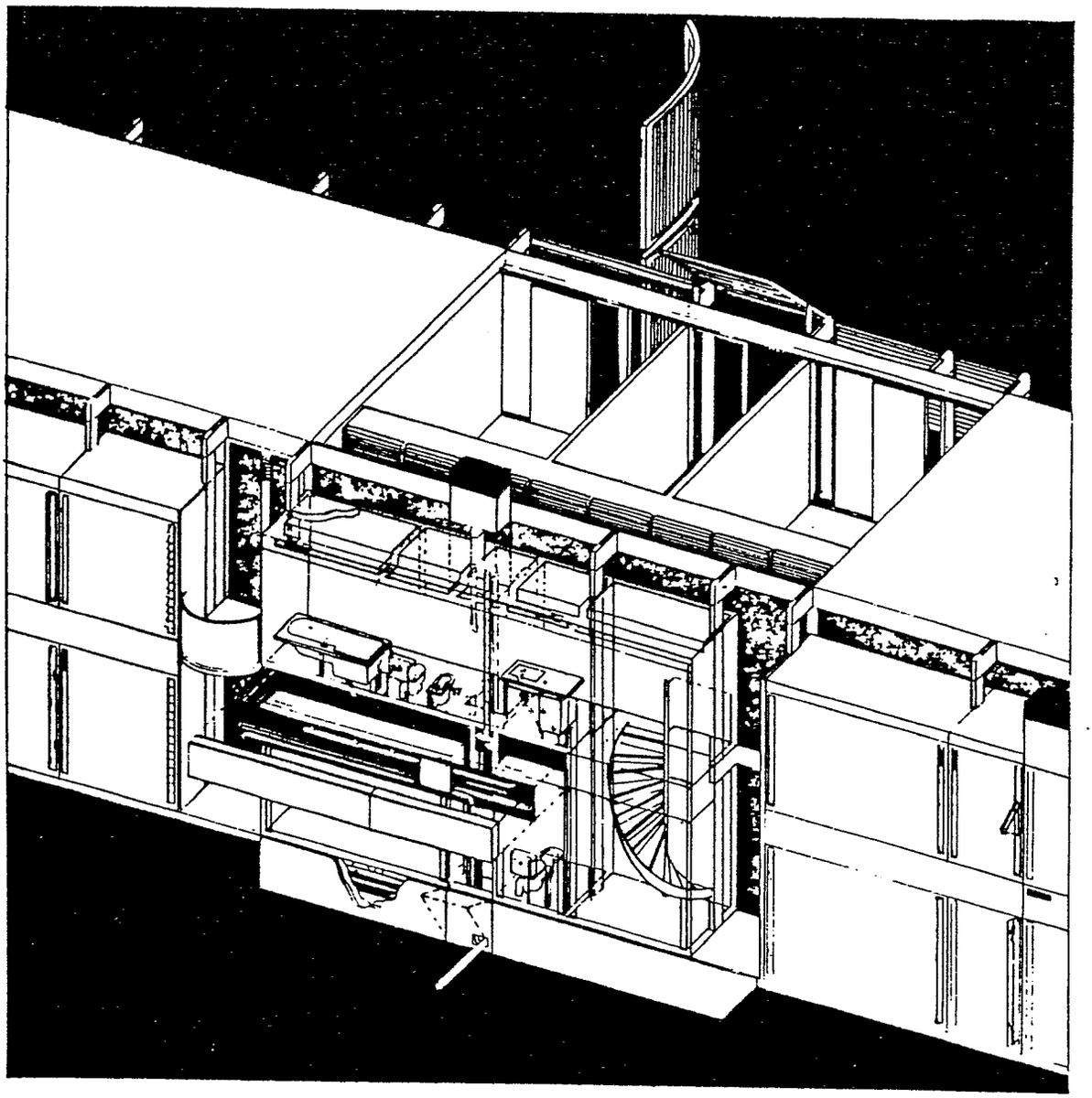

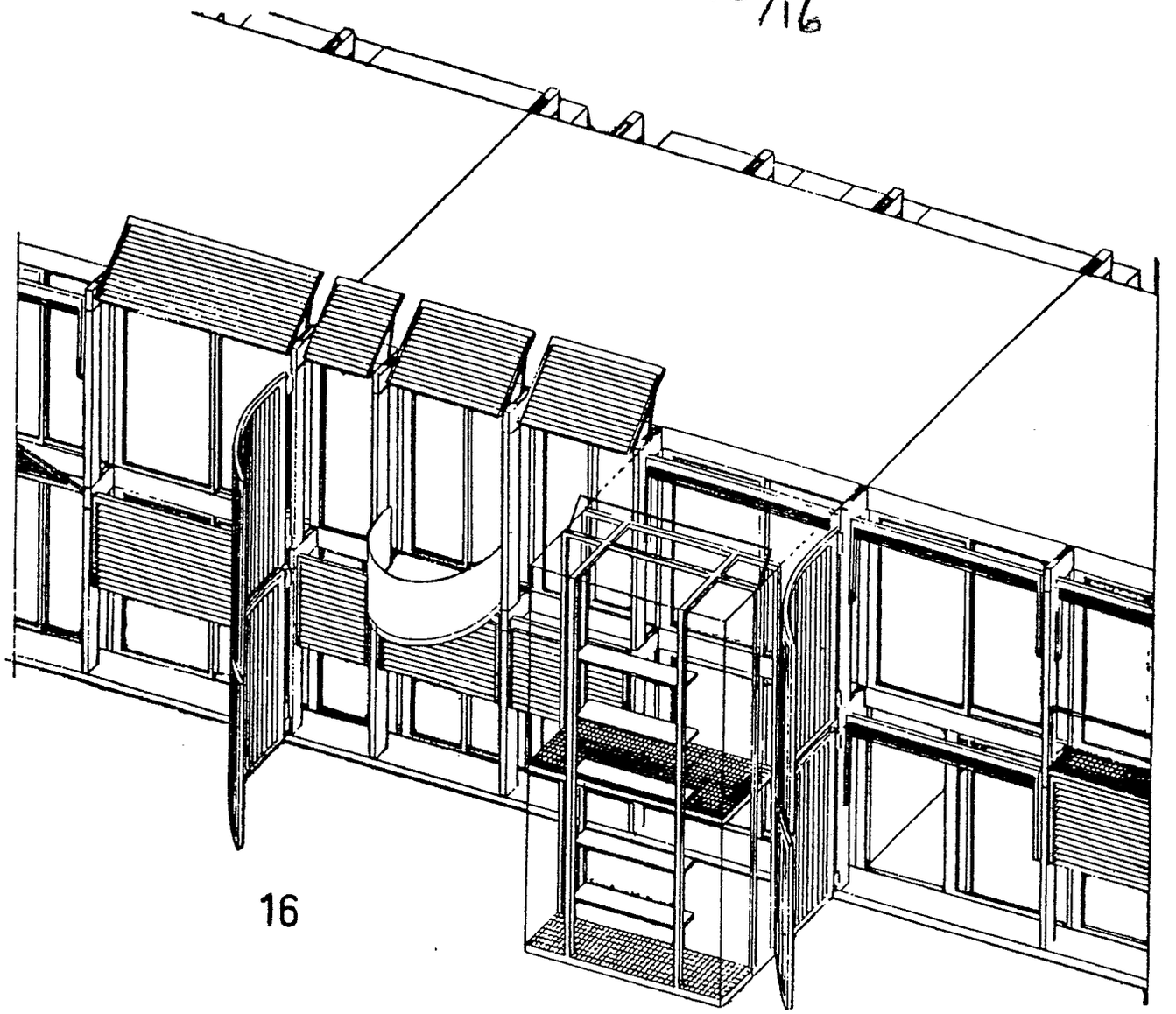

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European Patent Office

EUROPEAN SEARCH REPORT

Application number
EP 81 20 1332

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
D,A	US - A - 4 078 342 (COHEN) * Column 2, lines 41-68, column 3, lines 1-41; figures 1,2 *	1
A	FR - A - 2 262 176 (SOGEC) * Page 1, lines 34-37, page 2, lines 1-31; figures 1-5 *	1,2
A	FR - A - 996 664 (LE CORBUSIER) * Page 1, column 1, lines 1-21, page 2, column 1, lines 31-42, column 2, lines 1-29; figures 1, 2 *	1
A	US - A - 3 897 662 (FENCL) * Column 4, lines 15-67, column 5, lines 1-17; figures 4,5,6 *	1
A	DE - A - 1 784 978 (POULSEN) * Page 3, lines 21-24, page 4, lines 1-26, page 5, lines 1-5; figures *	1,2,4, 7
A	FR - A - 2 263 359 (ARROMAN) * Page 4, lines 19-40, page 5, lines 1-24; figures 1-31 *	3

CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)

E 04 H 1/00

TECHNICAL FIELDS SEARCHED (Int.Cl. 3)

E 04 H
E 04 B

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

X The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	24-03-1982	SCHOLS