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(54) **Space lattice works-bearing construction system, with frames of perforated angle plates of one or more angles**

(57) Space lattice works - bearing construction system with frames single (A1), (A2), (A3) or divided (B1), (B2) of perforated angle plates in order to assembly and dismantle in length, width and height, easily and simply.

The frames of divided type have the possibility to enlarge at length and width.

The advantages of this system are that this it is adapted in various dimensions (at length, width and

height) in order to assembly and dismantle easily and simply.

Also the frames have standard pitching step (Z) with a lot of connection holes (P) for facility in the use as well as a lot of (electric, hydraulic) supplies holes (K). The system also can be used in a lot of applications such as space frames, dry constructions, partitions, furred ceilings, metal buildings, greenhouses, shelves e.t.c. and possibility of standardised covering also.

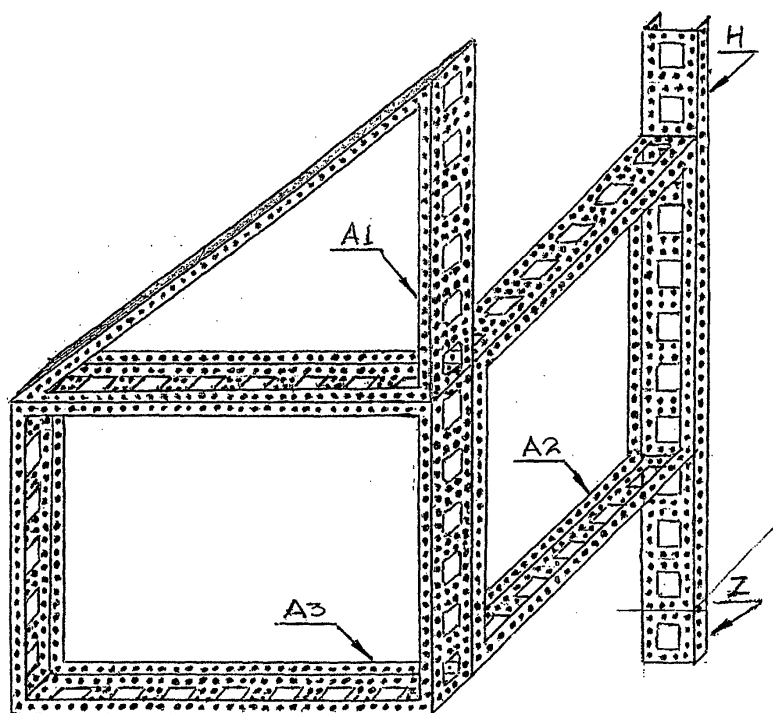


Fig -1

EP 1 484 454 A2

Description

[0001]

- This invention is referred to a space lattice works-bearing construction system which consisted of perforated angle plates one or more angles in frames system. 5
- Perforated angle plates exist many of various types, for use of space frames, shelves etc. This however become with cropping parts in various lengths and assembly in case (eg as with dexion type angle plates) and no in standardised system of frames. 10

[0002] Space frames exist also in various types like single or divided such as with nodes which have radiated connection holes, and connection constructional arms, but this become by cropping the arms and working out the ends for fitting to nodes but not in a standardised system of frames single or divided. 15 20

[0003] Also exists abundance of space lattice works and frames construction with use of bars of various cross-sections and materials (eg hollow bars aluminium profile etc) that the connection becomes with various connection methods of fitting or welding in case. No however in standardised single or divided frames system of perforated angle plates. 25

[0004] The above mentioned current level of technique requires personal natural effort for measuring, cutting, fitting or welding in the each work separately and with proportional waste of material. 30

[0005] Is not possible the re-use of material without new measuring, cutting etc.

[0006] Is not possible the passage of electric-hydraulic supplies through frames construction. 35

[0007] Is not possible the storage of ready to use products (frames) in the points of sale because does not exist standardisation in the frame parts. As well as it is not possible the standardised covering of construction (frames). 40

[0008] The above mentioned disadvantages are raised with the present invention.

- The present system of space lattice works-bearing construction system consisted in frames of perforated angle plates cross section «Π» or other cross-sections (i.e. one or more angles) and has the following characteristic advantages. 45

1. Frames are in various forms (triangular, square, parallelograms etc). 50
2. There are single or divided from perforated angle plates (one or more angles) metallic, plastic or other material.
3. Also there are in standardised dimensions and perforations (i.e. they have standard pitching step) in order to assembly and dismantle in length, width and height, easily and simply. 55

4. Frames have small connection holes and big holes for the passage of electric, hydraulic supplies.

5. Divided frames connection holes on contact areas (union points) are made with hollow ness on hole edges internally the frame so that on contact areas of divided parts fastening elements (bolts, rivets, mechanical expansion etc) to be inside and not projecting externally of frames.

6. All connection holes as well as electric, hydraulic and other supplies it is possible to be with internal hollow ness for uniformity in construction strengthening and alignment facilitation of frames on system assembly.

7. Divided frames have the possibility to enlarge in length and width because it is possible to add to their sides straight parts in various lengths.

8. The above mentioned frames system can be associated/combined also with separated straight parts (bars) (fig.1) in same cross-section and pitching step.

9. In the present system exists the possibility of standardised cover of frames with various materials such as steel plate, plastic, plastering board, cement board, wooden board, glass etc.

- The present invention can be comprehended completely from the following description and the attached figures.

Fig-1 Space lattice works with frames (in diminution): triangular (A1), square (A2), parallelogram (A3) as well as straight part, bar.(H). System pitching step (Z)

Fig-2 System pitching step (Z) (in relative scale with possibility of increase and/or decrease) with connection holes (P), and supply hole (K)

Fig-3 Connections frames in cross section, with connection holes (P), and supply hole (K)

Fig-4 Divided frames square (B1), triangular (B2) (in diminution). (M)- straight parts. (N)- angle parts.

Fig-5 Pitching step (Z) with internal hollow ness on holes. Connection holes (P) and supply hole (K) with hollowness.

Fig-6 Pitching step (Z) in cross section. Connection holes (P) and supply hole (K) with hollow ness in cross section.

Fig-7 First connection way for angle or straight parts of divided frames: Plates of two (T1), four (T2), four (T3) and six (T4) holes flat or angle plates. The plates are fitted at the contact areas internally the parts of the contact areas in corresponding holes of connection of two parts, with corresponding bolts or rivets or mechani-

cal expansion or other method fastening and holding the frame parts. Plates connection holes can be threaded in case of using bolts without nuts for easily assembly.

Fig-8 Second connection way for angle or straight parts (X1) and (X2) divided frames. The holding plate (E) cross section correspondence with frame cross section applies internally of parts on contact areas. The holding plate made of two connection hole rows (on row for each part) fastened with bolts, rivets, mechanic expansion etc.. Plates connection holes can be threaded in case of using bolts without nuts for easily assembly.

Fig-9 Third connection way angle or straight parts (X3) and (X4) of divided frames. Each angle or straight part in one of its two endings has an additional connection holes row with internal step (Y) i.e. in cross section that applies internally holes row of the next part on contact areas. These holes fastened with bolts or rivets or mechanical expansion or other method. Connection holes row of step can be threaded in case of using bolts without nuts for easily assembly.

NOTES:

[0009]

1) As already exposed figures 1 and 4 are in diminution while all the rests are in relative scale with possibility of increase or even reduction.

2) Pitching step is a complete part consisted of connection holes and supplies hole and repeated in all the perimeter of frames or the length of parts (straight or angle).

Connection holes are symmetrically distribute on each side of pitching step so that each step can be connected with any side of pitching step of other part horizontal or vertical (or other angle depending on the designing).

The hole of electric-hydraulic supplies passage (if it is provided and exists) is in central place of pitching step in order to be possible the correspondence and assembly of parts frames to connection holes in horizontal or vertical case (and/or other angle according to drawing).

In presence system cross-section "T" according to figures each pitching step consists of one supply hole with (12) perimetric connection holes and (4) connection holes on each side (edgewise).

3) In case of one angle cross-section frames (i.e. "T") each pitching step is possible to be consisted from one only connection hole on each side, so that:

- When two frames or sections connected in their sides forming frames or parts cross-section "T"

(that is to say double "T").

- When two frames or parts connected with fastening distance plates of two (2) pitching steps forming frames or parts with cross section "T" (that is to say two opposite "T").
- When two fastening / distance plates are bigger of two (2) pitching steps forming cross-section with two opposite «Γ» with distance between them suitable for passage of supplies (electrical, hydraulic e.t.c.).

4) Connection ways is possible applied separately or in conjunction between them.

Claims

1. Space lattice works - bearing construction system with frames of perforated angle plates one or more angles which characterised from divided frames in various types (square (B1), triangular (B2) e.t.c.) and consist from angle (N) and/or straight parts (M).

Divided frames have the possibility to enlarge in length and width because can be added on their sides straight parts in various lengths (M).

- Connection holes on contact area (partition) of divided frames parts connection holes must be with inside hollow ness in order so that connection elements (bolts, nuts e.t.c.) not projecting on outer frames sides.
- In presence divided frames system it is possible all connection holes (P) as well as electric-hydraulic and anything else supplies (K) to be with inside hollow ness for uniform construction, for more strengthening and alignment facilitation of frame on system assembly.

2. Space lattice works - bearing construction system with frames of perforated angle plates one or more angles according to claim 1 and **characterized by** frames of various forms (triangular (A1) square (A2), parallelograms (A3) etc) which have small connection holes (P) and big holes (K) for electric hydraulic and other supplies.

Frames are in standard dimensions and perforation (i.e. have standard pitching step and it is possible to constructed in length, width and height. Also can be associated/combined with straight parts (bars) (H) with same cross section and pitching step.

- Pitching step (Z) : it is a complete part consisted of connection holes (P) and supplies hole (K) of electric, hydraulic and other supplies and this (pitching step) repeated in all perimeter of frames or all length of parts (straights or angulars).

- Connection holes (P) are in symmetrical distribution of a pitching step such as each pitching step can be connected to any side of another pitching step of other part-frame horizontally or vertically (and/or angle according to drawing). 5
- Passage hole of electric-hydraulic supplies (K) is in central place of pitching step in order to be possible the correspondence and assembly of sections to connection holes in horizontal or vertical case (and /or other angle according to drawing). 10

The frames is possible to be metallic, plastic or other material and have the possibility of standard covering. 15

3. Space lattice works - bearing construction system with frames of perforated angle plates one or more angles according to claim 2 and **characterized by** frames of various forms (triangular(A1) square (A2), parallelograms (A3) etc). 20

- In presence divided frames system it is possible all connection holes (P) as well as electric- hydraulic and anything else supplies (K) to be with inside hollow ness for uniform construction, for more strengthening and alignment facilitation of frame on system assembly 25

4. _ Space lattice works - bearing construction system with frames of perforated angle plates one or more angles according to claim 1 and **characterized by** the connection way for angle or straight parts of divided frames: Plates of two (T1), four (T2), four (T3) and six (T4) holes flat or angle plates. The plates are fitted at the contact areas internally the parts of the contact areas in corresponding holes of connection of two parts, with corresponding bolts or rivets or mechanical expansion or other method fastening and holding the frame parts. Plates connection holes can be threaded in case of using bolts without nuts for easily assembly. 30 35 40

5. _Space lattice works - bearing construction system with frames of perforated angle plates one or more angles according to claim 1 and **characterized by** the connection way for angle or straight parts (X1) and (X2) divided frames. The holding plate (E) cross section correspondence with frame cross section applies internally of parts (X1), (X2) on contact areas .The holding plate made of two connection hole rows (on row for each part) fastened with bolts , rivets, mechanic expansion etc.. Plates connection holes can be threaded in case of using bolts without nuts for easily assembly. 45 50 55

6. _Space lattice works - bearing construction system with frames of perforated angle plates one or more

angles according to claim 1 and **characterized by** the connection way angle or straight parts (X3) and (X4) of divided frames. Each angle or straight part (X3), (X4) in one of its two endings has an additional connection holes row with internal step (Y) i.e. in cross section that applies internally holes row of the next part on contact areas. These holes fastened with bolts or rivets or mechanical expansion or other method. Connection holes row of step (Y) can be threaded in case of using bolts without nuts for easily assembly.

7. _ Space lattice works - bearing construction system with frames of perforated angle plates one or more angles according to claims 1,2and 3 **characterized by** angle cross-section frames (i.e.<Γ>) and each pitching step is consisted by one only connection hole in each side.

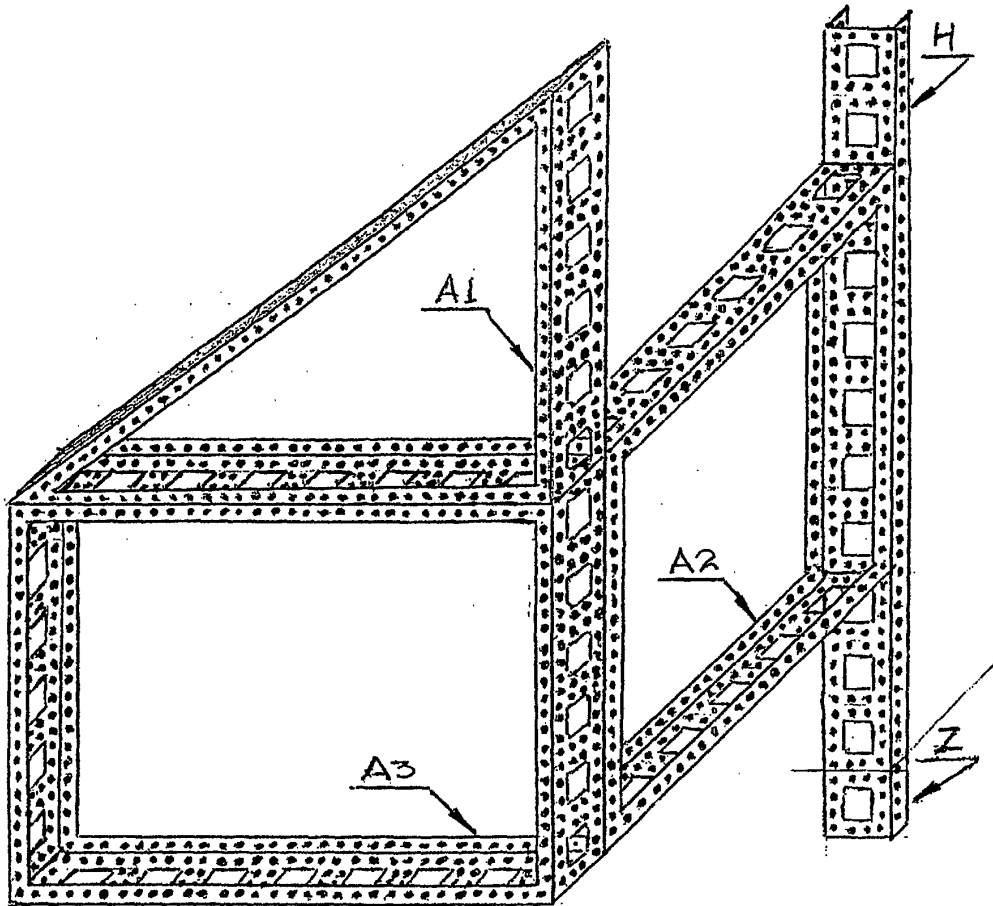


Fig-1

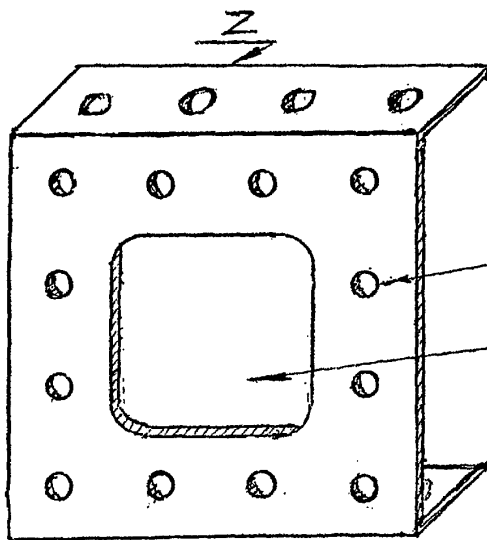


Fig-2

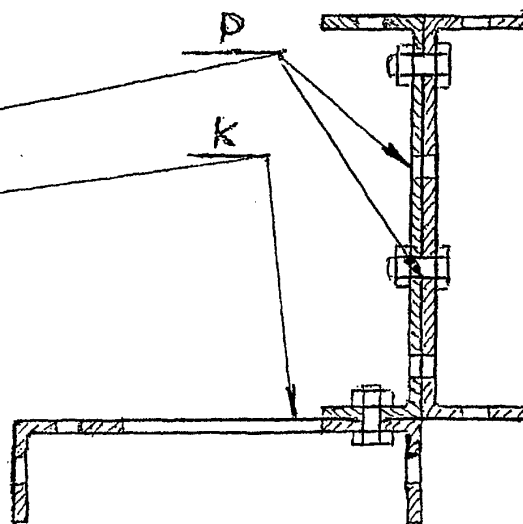


Fig-3

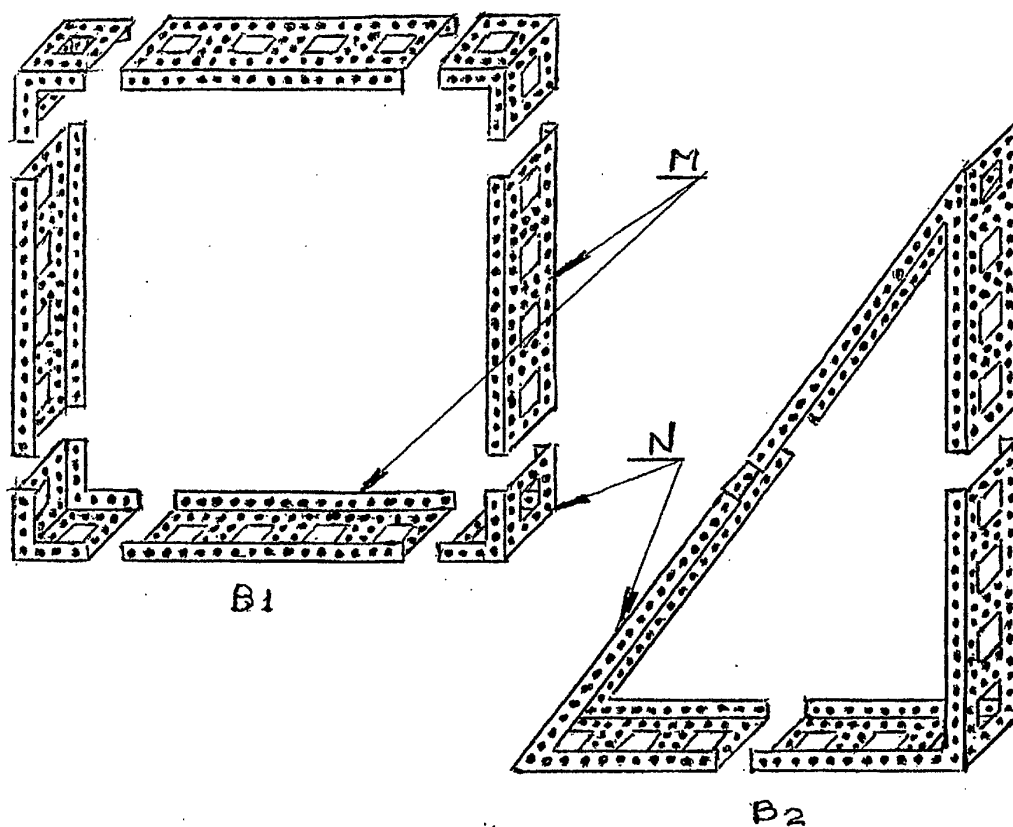


Fig -4

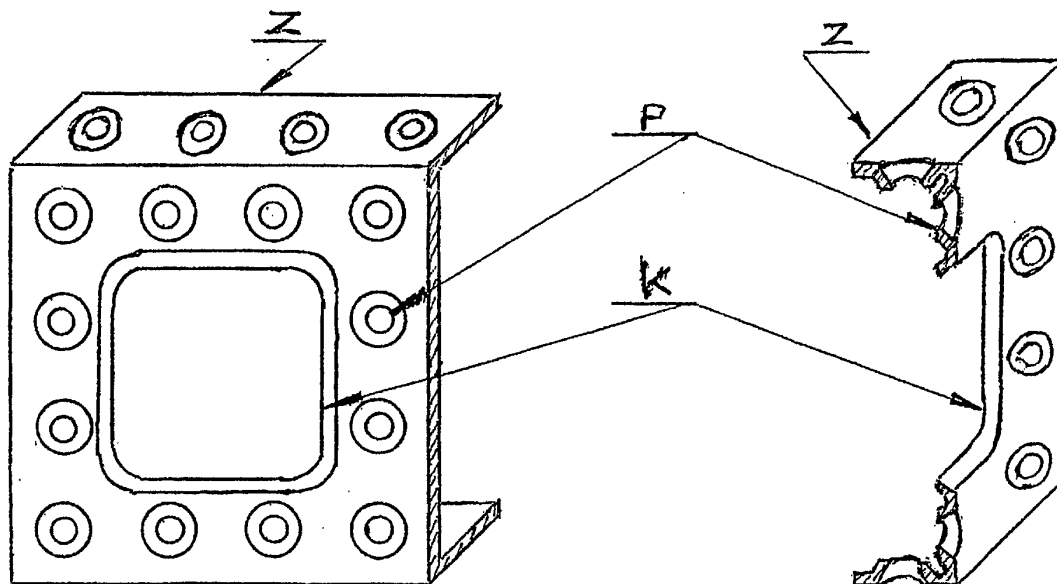


Fig-5

Fig-6

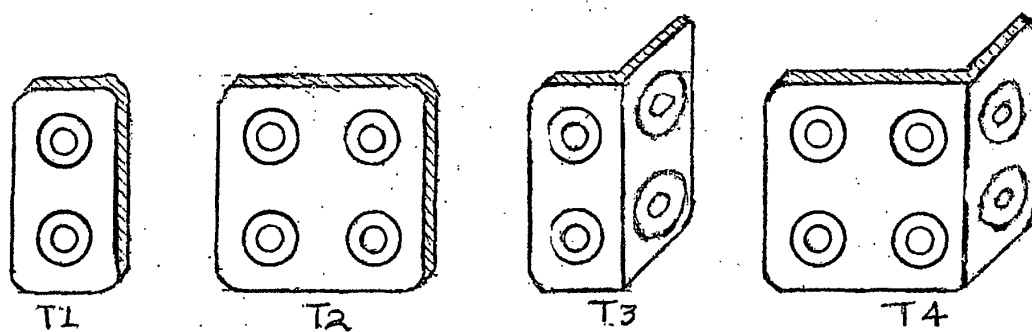


Fig. 7

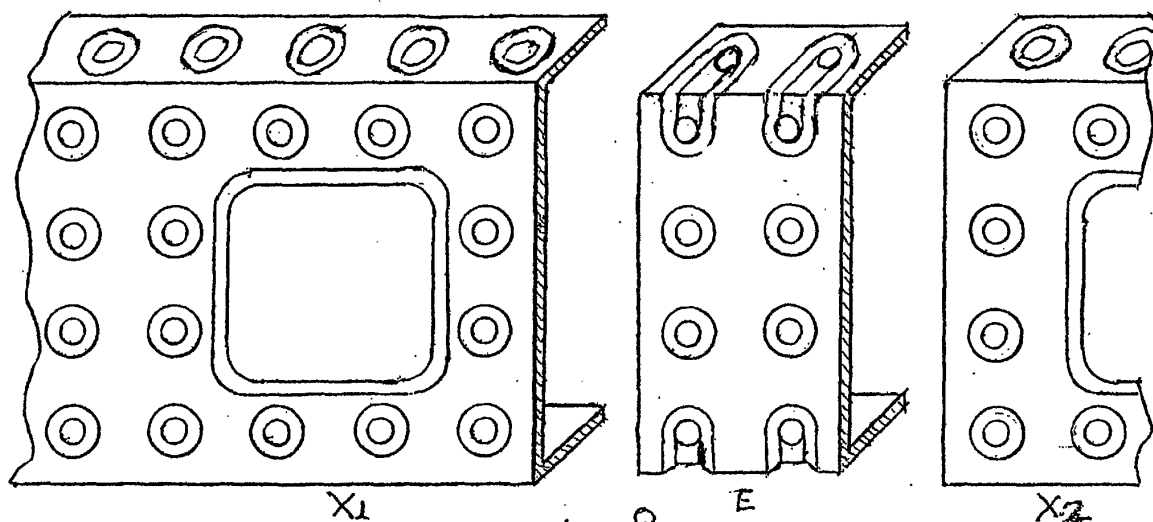


Fig. 8

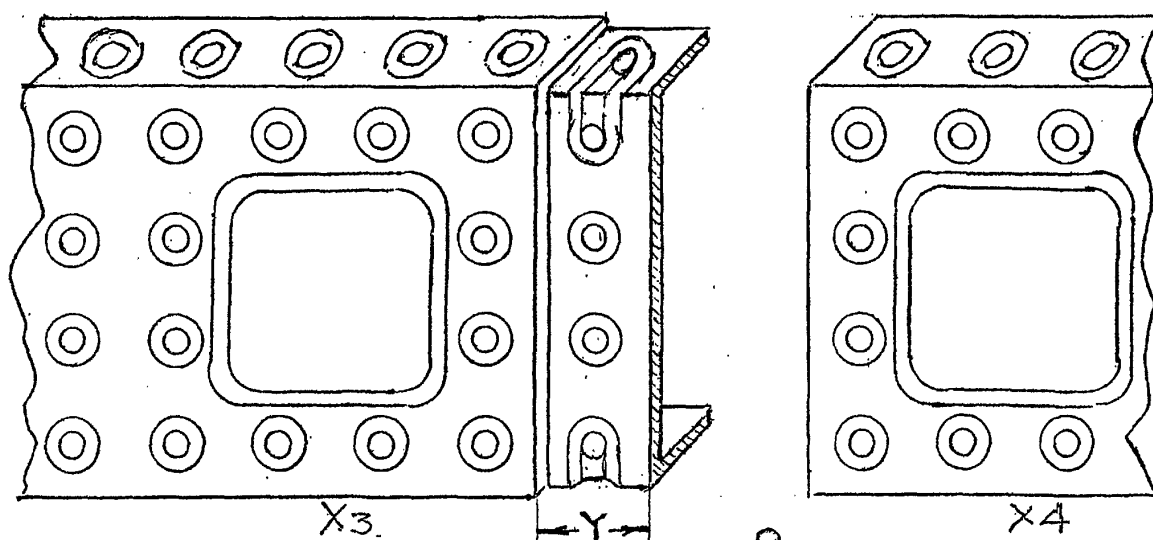


Fig. 9