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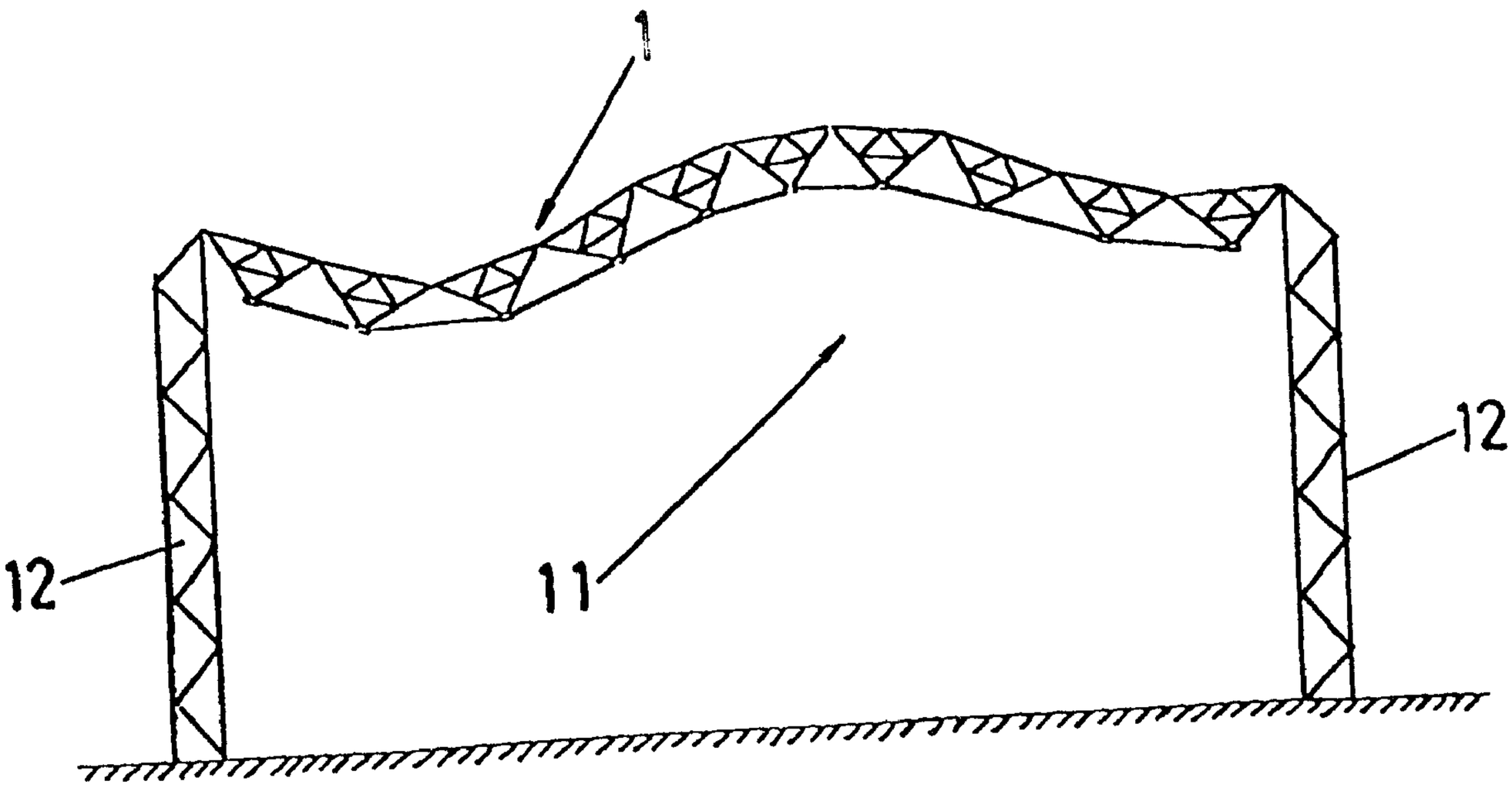
(54) Title: COILABLE BEAM



(57) Abrégé/Abstract:
Coilable beam formed by hinged modules, each of which has a rigid part under compression and a flexible part under traction. The modules have one end that serves as a grip through the inside of which is passed a resistant and flexible element, such as a cable or chain. By modifying the length of the flexible element between the grips (or clamps) the geometric shape of the beam is modified. The beam can be rolled up on the flexible element since the rigid part of each module is joined by a hinge to the contiguous modules.

PATENT SUMMARY AND GRAPHIC

P200000299
Date of Presentation

SUMMARY (Max. 150 words)
Coilable beam formed by hinged modules, each of which has a rigid part under compression and a flexible part under traction. The modules have one end that serves as a grip through the inside of which is passed a resistant and flexible element, such as a cable or chain. By modifying the length of the flexible element between the grips (or clamps) the geometric shape of the beam is modified. The beam can be rolled up on the flexible element since the rigid part of each module is joined by a hinge to the contiguous modules.

GRAPHIC

[Sketch]

COILABLE BEAM

OBJECT OF THE INVENTION

The object of the present invention is a coilable beam, which is modular, hinged, of variable geometry and length.

BACKGROUND TO THE INVENTION

As State of the Technique it can be indicated that a variety of beams are known that are differentiated by their constitution and use, it being their geometry that defines the use of each one of these beams.

None of the beams included in the State of the Technique has characteristics like those cited above and which are the principal characteristic of the beam of the invention, which are, being modular, hinged and of variable geometry and length.

DESCRIPTION OF THE INVENTION

Each module of the beam of the invention has an upper part subjected to compression forces, formed by the rigid part of the modules in the shape and materials most appropriate to resist the forces of compression. These materials may be, among others, iron, concrete, etc.

The lower part of each module of the beam is subjected to traction forces.

This part is formed by flexible elements resistant to traction forces, such as cables, ropes, chains or similar.

The hinged joint of the rigid parts of adjacent modules, which are subjected to compression forces, can be formed by projections on the module that fit into the corresponding facing recess on the adjacent module, and vice versa. The modules remained joined because they are subjected to compression force and their join is guaranteed by the shape of the projections, for example, semi-cylindrical, semi-spherical.

The hinged joint on the rigid parts of the modules can also be made using bolts, which facilitates mounting *in situ* since this is a stable join.

The latter system allows the complete mounting of the beam, joints, rigid part and flexible part, in areas other than where it is used and its transport coiled up like a window blind, taking advantage of the flexible part being coilable.

Any type of curve can be obtained with the beam. The size and quantity of the modules is determined by the shape and length of the beam that is required in each case.

The beam can be used as a portico or a projecting beam. When used as a portico its ends are supported on two pillars and the flexible part is placed on the lower part, which is the part subjected to traction. As a projection, one end of the beam is held appropriately, with the rigid part of the modules held in the lower part of the beam which is the part under compression.

Ease of transport, and the rapidity of mounting, adapting it to the desired shape, mean that the beam of the invention is very appropriate, particularly for:

-Construction of stands for fairs and exhibitions.

-Summer or periodic tents with attractive designs.

-Safety in tunnels in a case of emergency or during construction.

-Use for formwork with variable shapes.

-Military use for any type of rapid construction adapted to the land and where access is difficult (hangars, bridges, camouflages, etc.).

If the beam is used in hangars, it allows the shaping beams of large hangars to adapt perfectly to the orography of the land. These structures, appropriately covered with camouflage canvas, make these locations appear like a part of the terrain.

In the construction of tunnels, during the construction of an underground railway, railway, roads, etc. and in mining, it is necessary for safety reasons to quickly reinforce advances as they are made. In this work immediate needs arise in unforeseen shapes, and the use of traditional vertical beams is a bad solution because they create a barrier that makes continuation of the work difficult, at least for a time.

In formwork, the use of the beam allows special or artistic shapes to be made.

The beam can also be used for formwork where traditional vertical pillars are not appropriate, for example when constructing bridges or in works where the traffic of persons or merchandise should not be obstructed.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a side view of the beam applied or used as a portico.

Figure 2 shows a side view of the beam used as a projecting beam.

Figure 3 shows a view of the beam coiled in a spiral position when not in use.

Figure 4 shows a perspective view of part of the beam perfectly stretched out.

Figure 5 shows a perspective view of one of the modules of the beam shown in Figure 4.

Figure 6 shows various views of a module, variation of the invention with regard to that shown in Figure 5.

Figure 7 shows different views of a solid module as a variation of the construction of the modules appearing in Figures 5 and 6.

Figure 8 shows a variation of the construction of the beam of the invention.

DESCRIPTION OF A PRACTICAL EXAMPLE OF HOW TO PUT THE INVENTION INTO PRACTICE

The beam 1 is formed by hinged modules 2 that form a structure of variable length and geometry.

Each of the modules 2 has a part with a rigid and/or solid structure 3 which may be variable in shape, for example, depending on whether the module is solid or not.

The rigid and/or solid part of the structure 3 is subjected to compression forces, while the part subjected to traction are cables 4 that interconnect the modules through the clamps 5.

The modules 2 are joined together by projections 6 and recesses 7 that form a male/female joint with concave-convex faces.

Another manner of joining the modules is by projections 8 that have a central transversal hole 9 that, when the projections on two consecutive modules are aligned, is held by a bolt 10 that forms a turn axle.

Figures 1 and 2 represent different shapes of beam according to use. In Figure 1 the beam is used as a portico 11 between two pillars 12 or vertical support structures.

In Figure 2 the beam is placed as a projecting beam 13.

In Figures 1 and 2 the position of the modules is inverted. That is, the modules of the beam in Figure 1 work with the upper end part under compression and the lower part under traction. However in the beam in Figure 2 the modules work with the upper part under traction and the lower under compression.

Figure 3 shows the coiling which the beam can undergo for transport and/or storage.

Figures 1 and 2 also show how the extended beam can take or achieve any type of curve. The size of the modules and the quantity of the same is determined by the shape and length of the beam, according to the needs when in use.

Figure 8 shows the beam in which the flexible element 1 is formed by a chain 13.

The clamps 5 in this case have bolts 14.

The rigid part 3 of the module can be lowered for storage.

CLAIMS

1.-Coilable, modular, hinged beam of variable length and geometry formed by articulated modules, each one of which has a rigid part under compression and a flexible part under traction; the modules have an end that serves as a clamp through the inside of which is passed a resistant and flexible element such as a cable or chain.

2.-Beam according to claim 1 characterised because each of the modules has projections at one end that correspond to recesses in the corresponding opposite end on the same plane, forming an articulated coupling between modules.

3.-Beam according to claim 1 and 2 characterised because the projections of each articulation between two modules is aligned and held by a bolt that runs through facing holes in the transversal direction of the said projections.

4.-Beam according to claim 1 characterised because by increasing or decreasing the length of the flexible and resistant element between the grips (or clamps) the geometric shape of the beam can be modified in the longitudinal direction.

5.-Beam according to claim 1 characterised because in the longitudinal direction it shows a curve, and the size and number of the modules is determined by the shape and length of the beam.

6.-Beam according to claim 1 characterised because when the beam is not in use it is rolled into a coil.

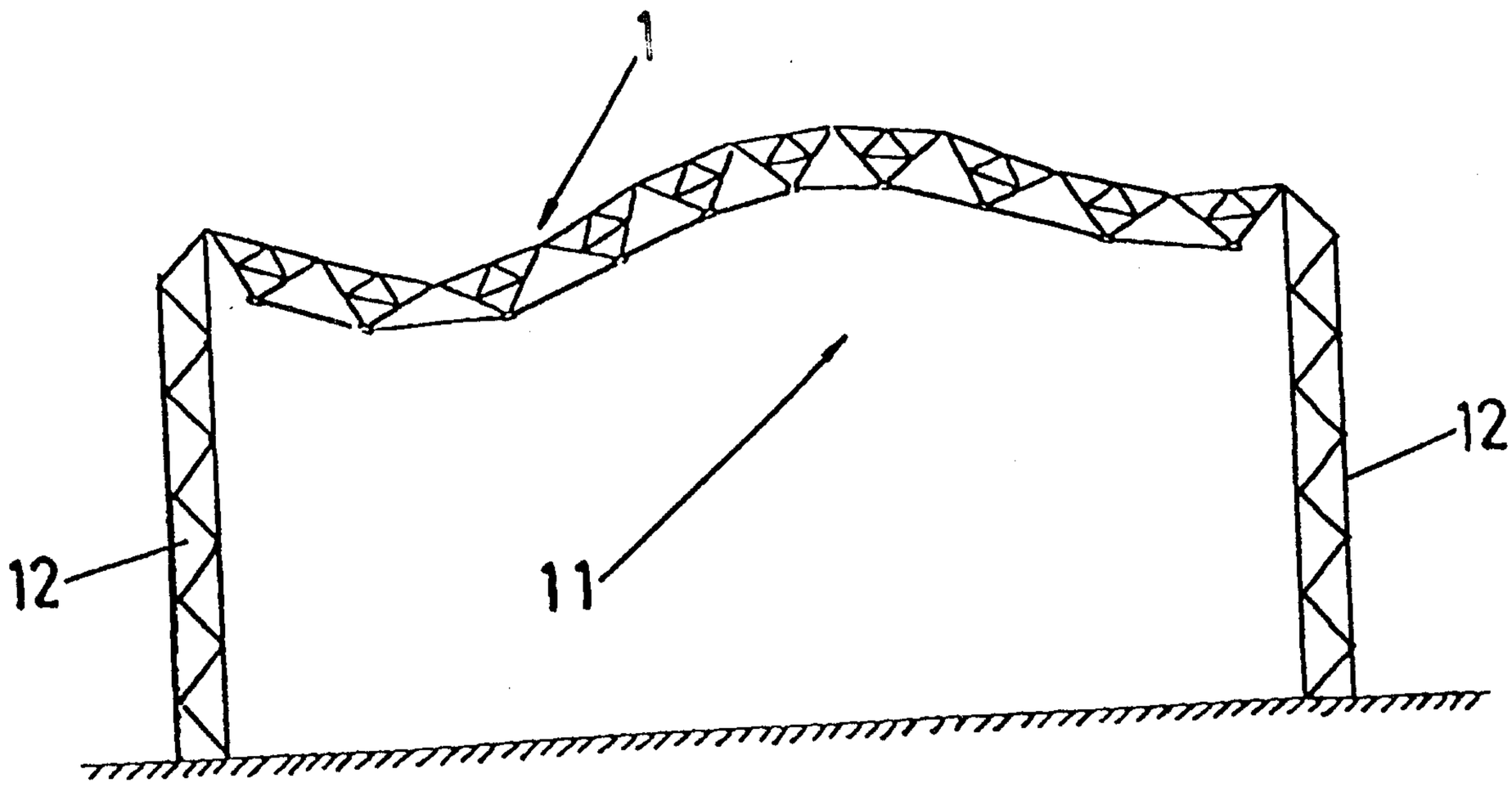


Fig. 1

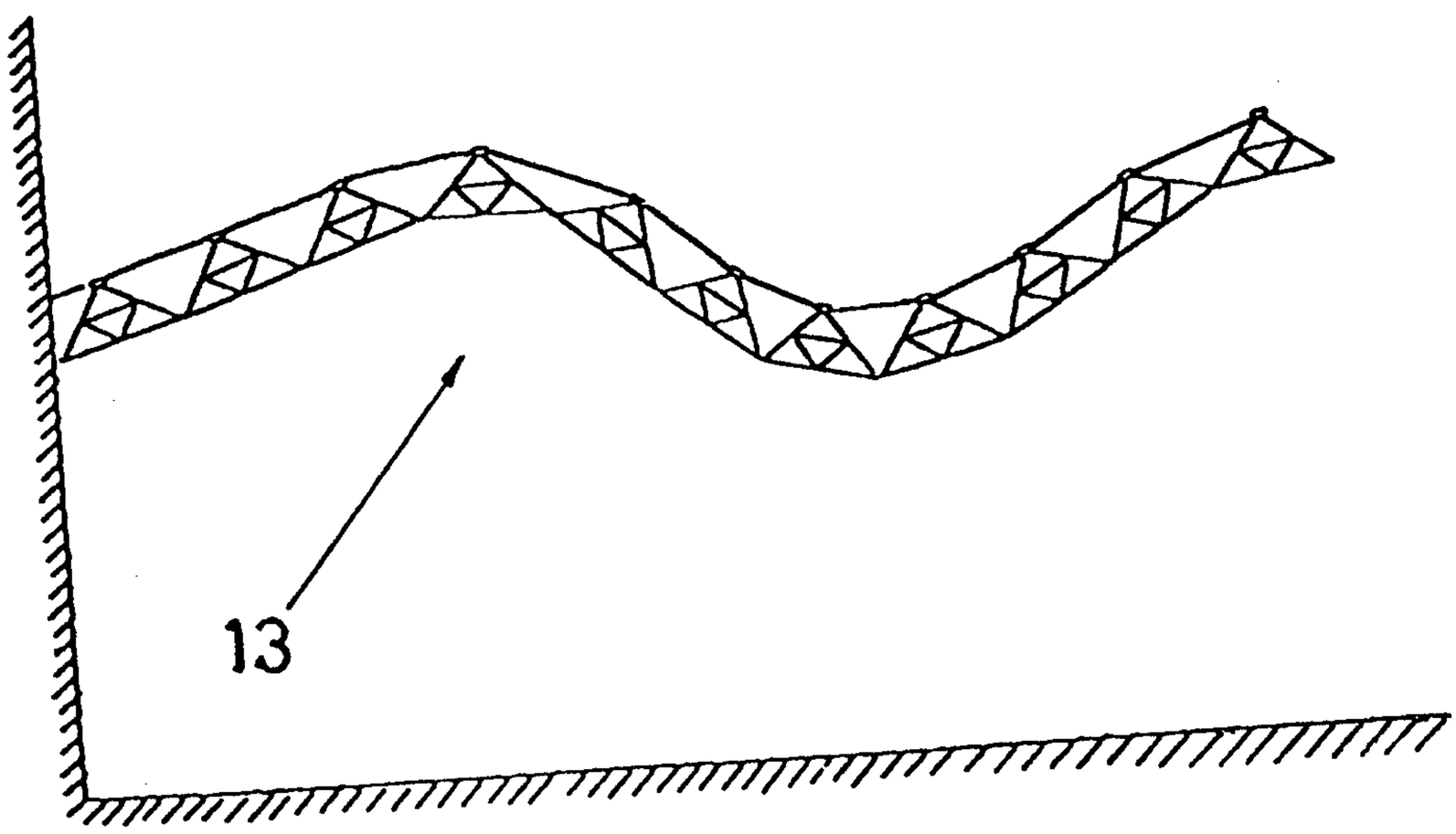


Fig. 2

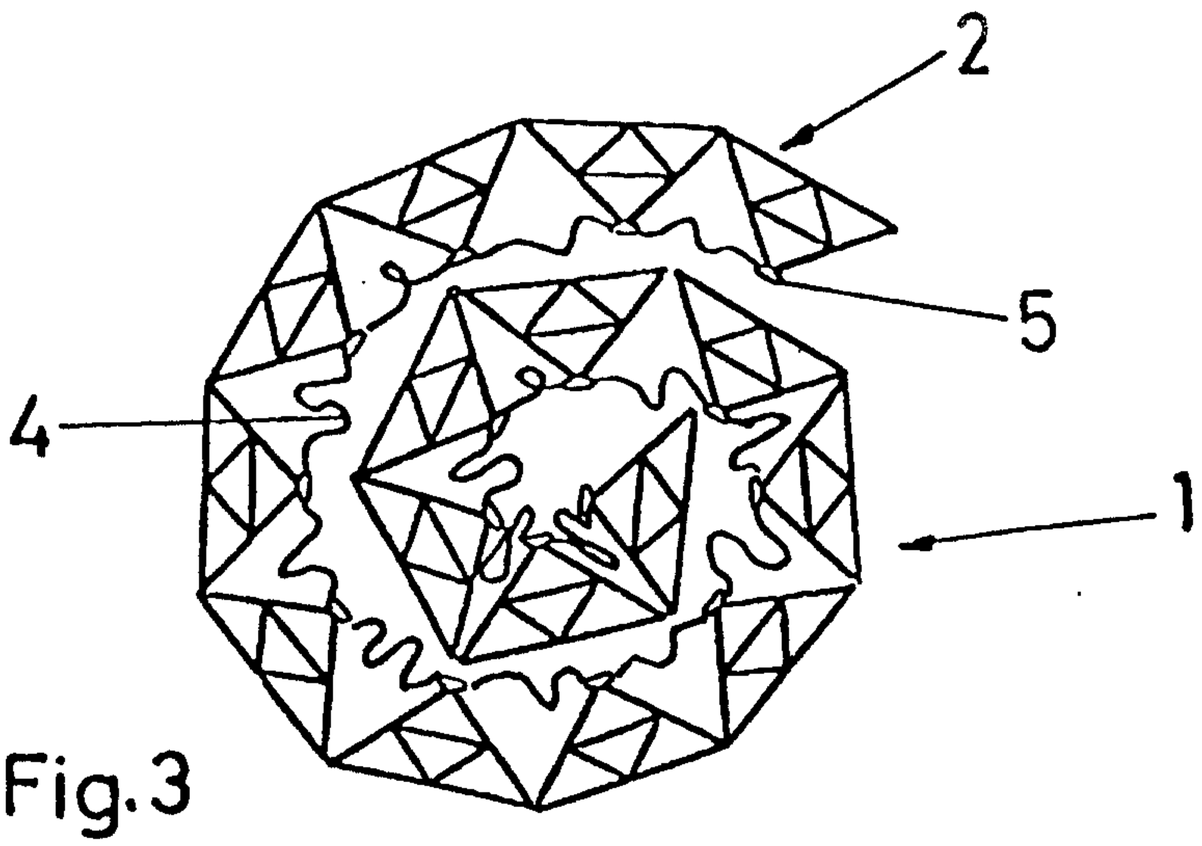


Fig.3

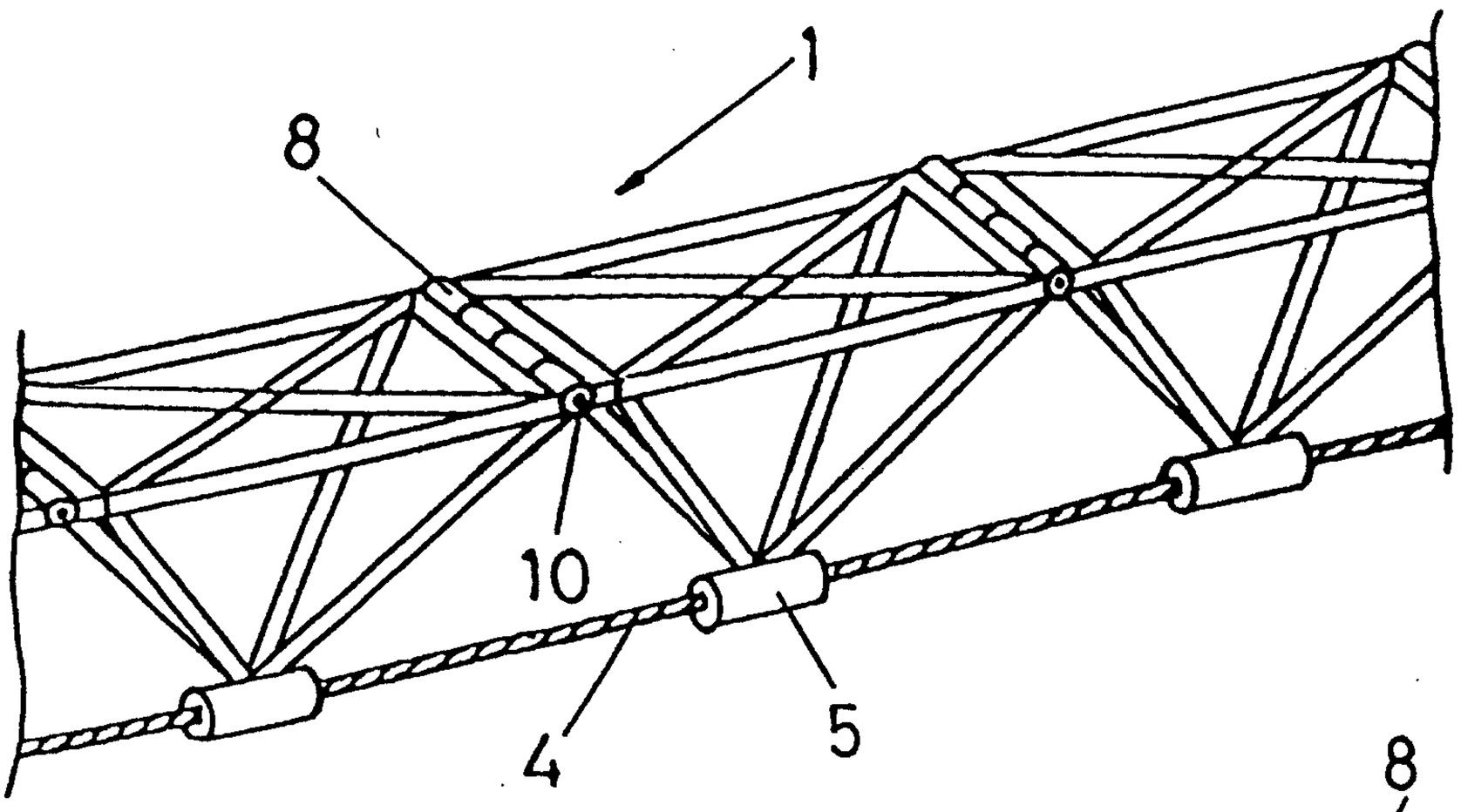


Fig. 4

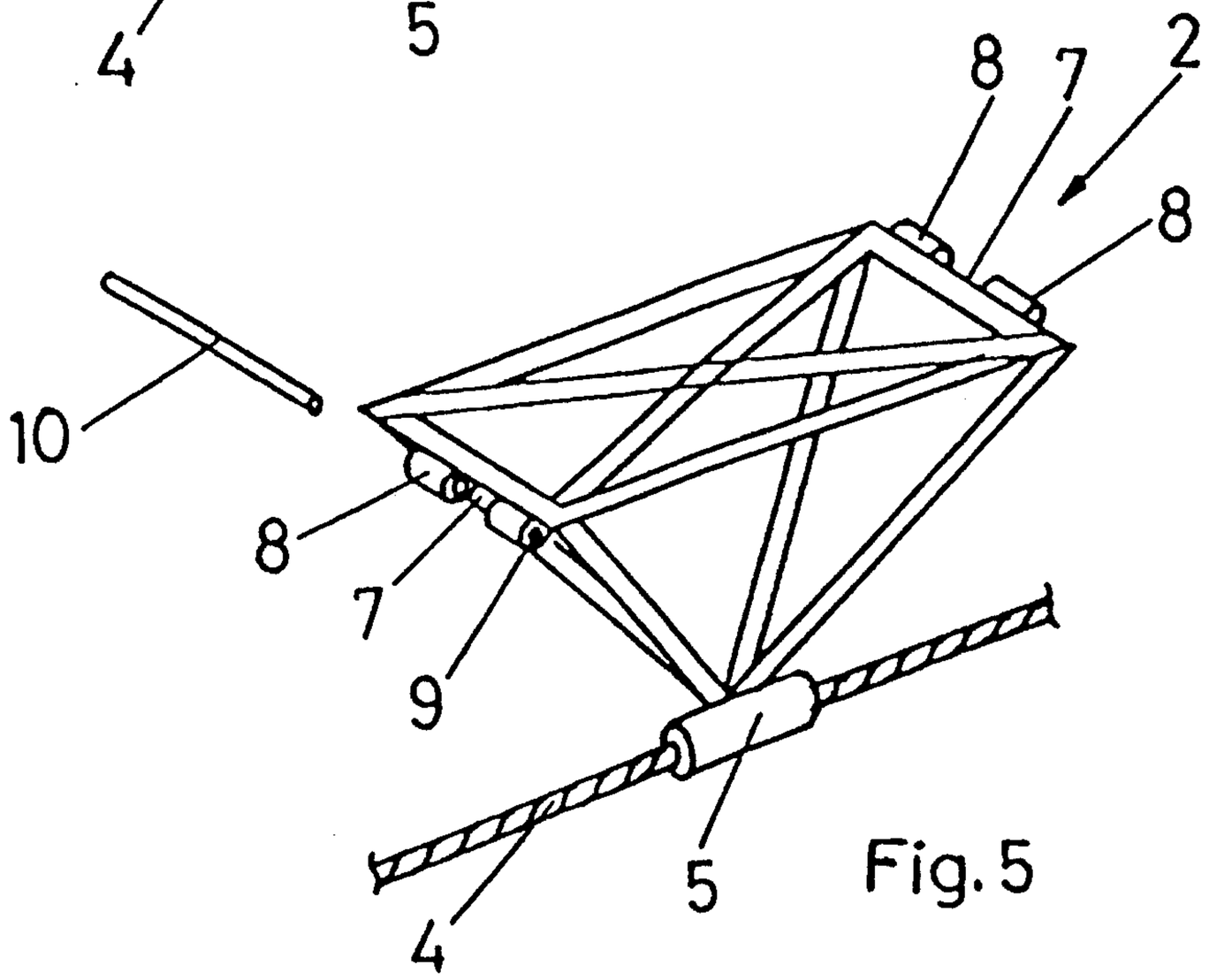


Fig. 5

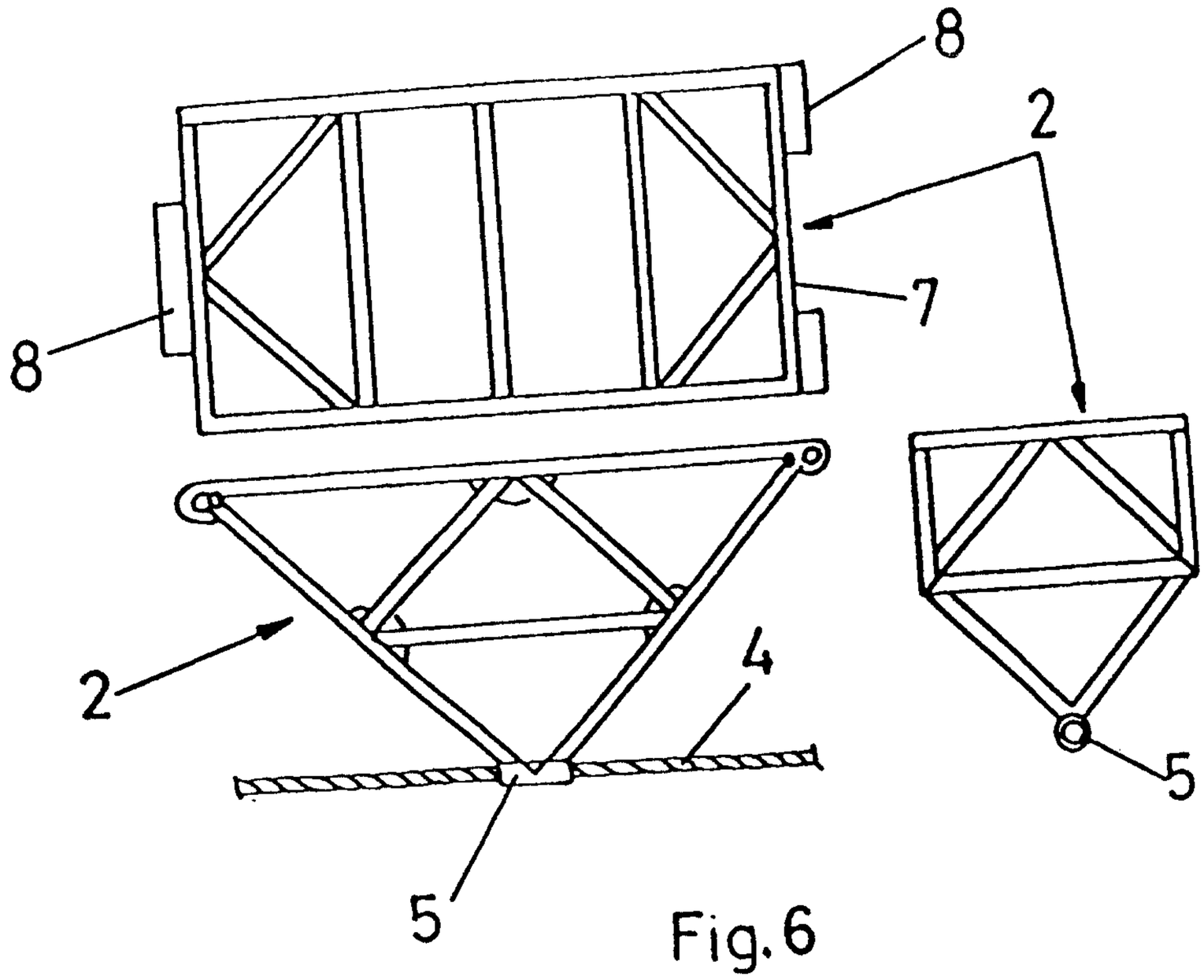


Fig.6

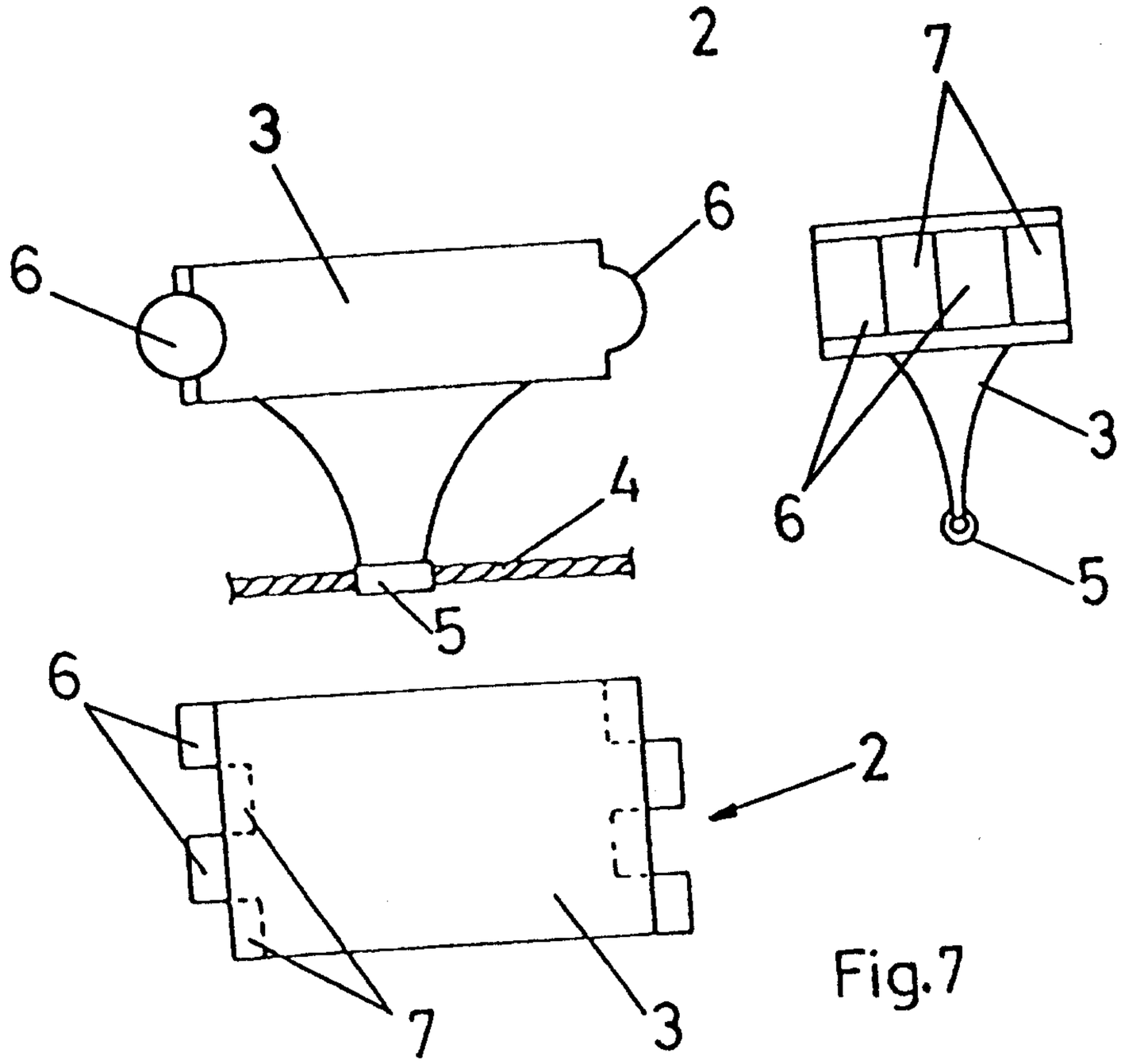


Fig.7

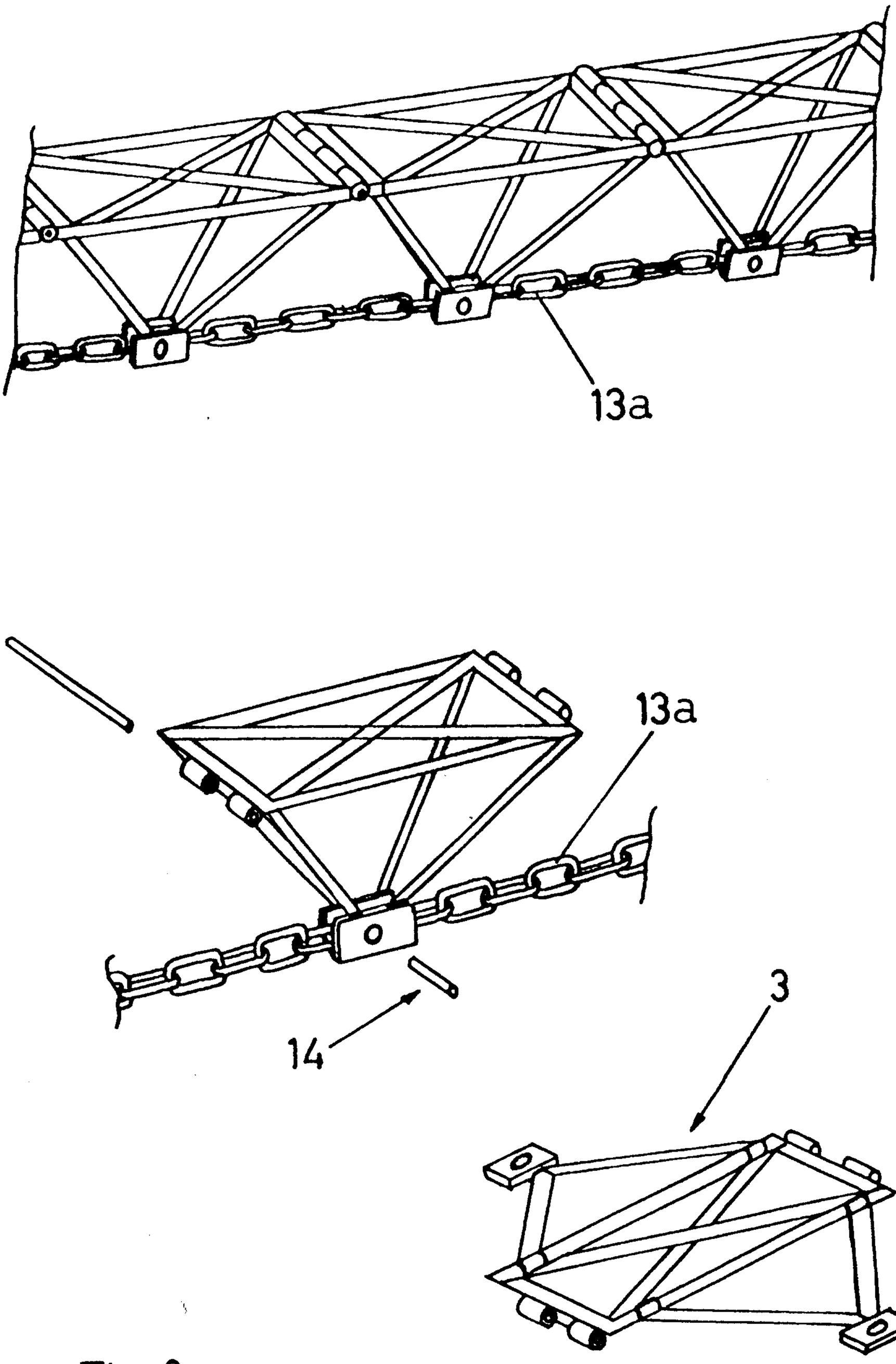
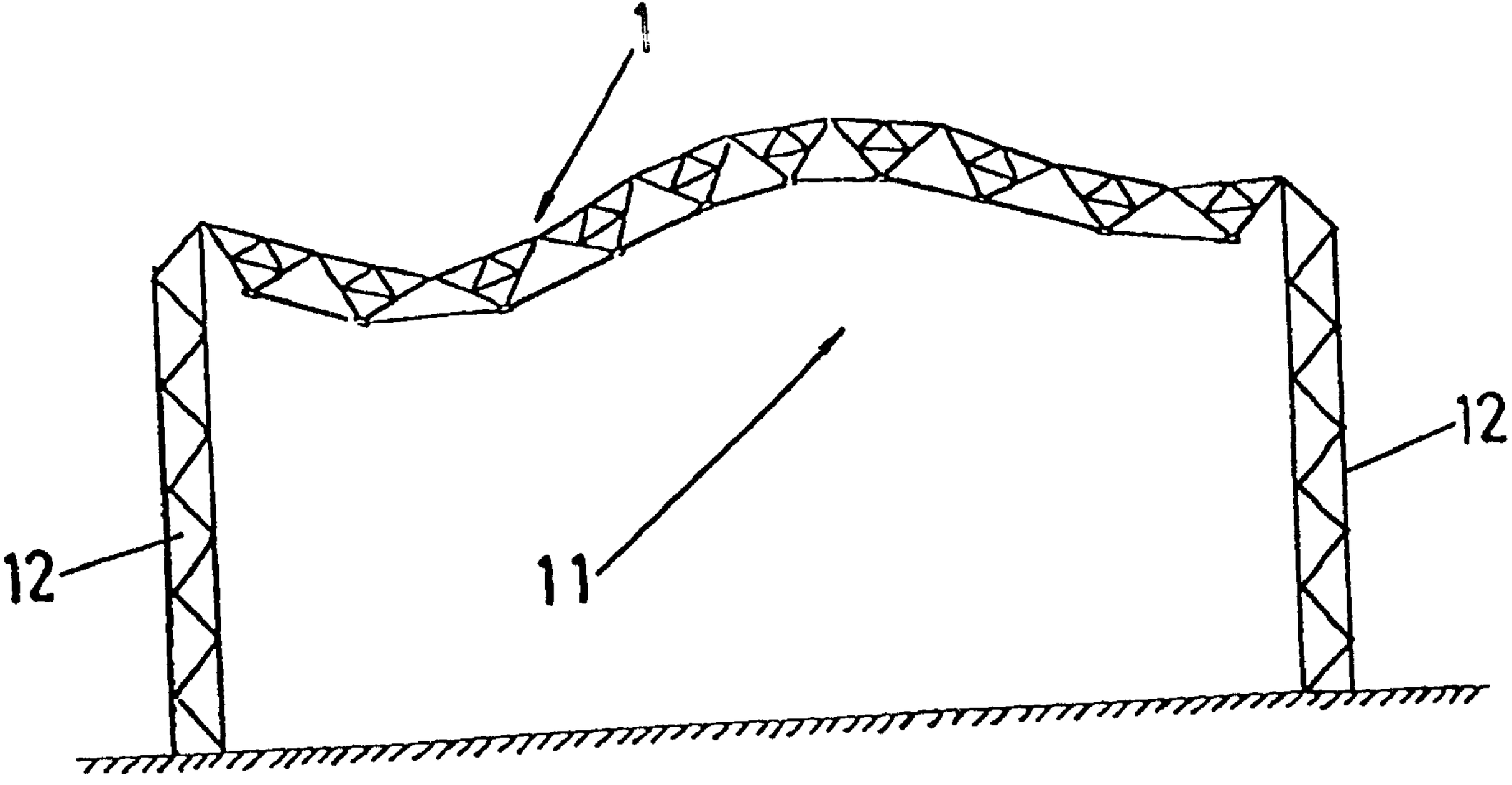


Fig. 8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