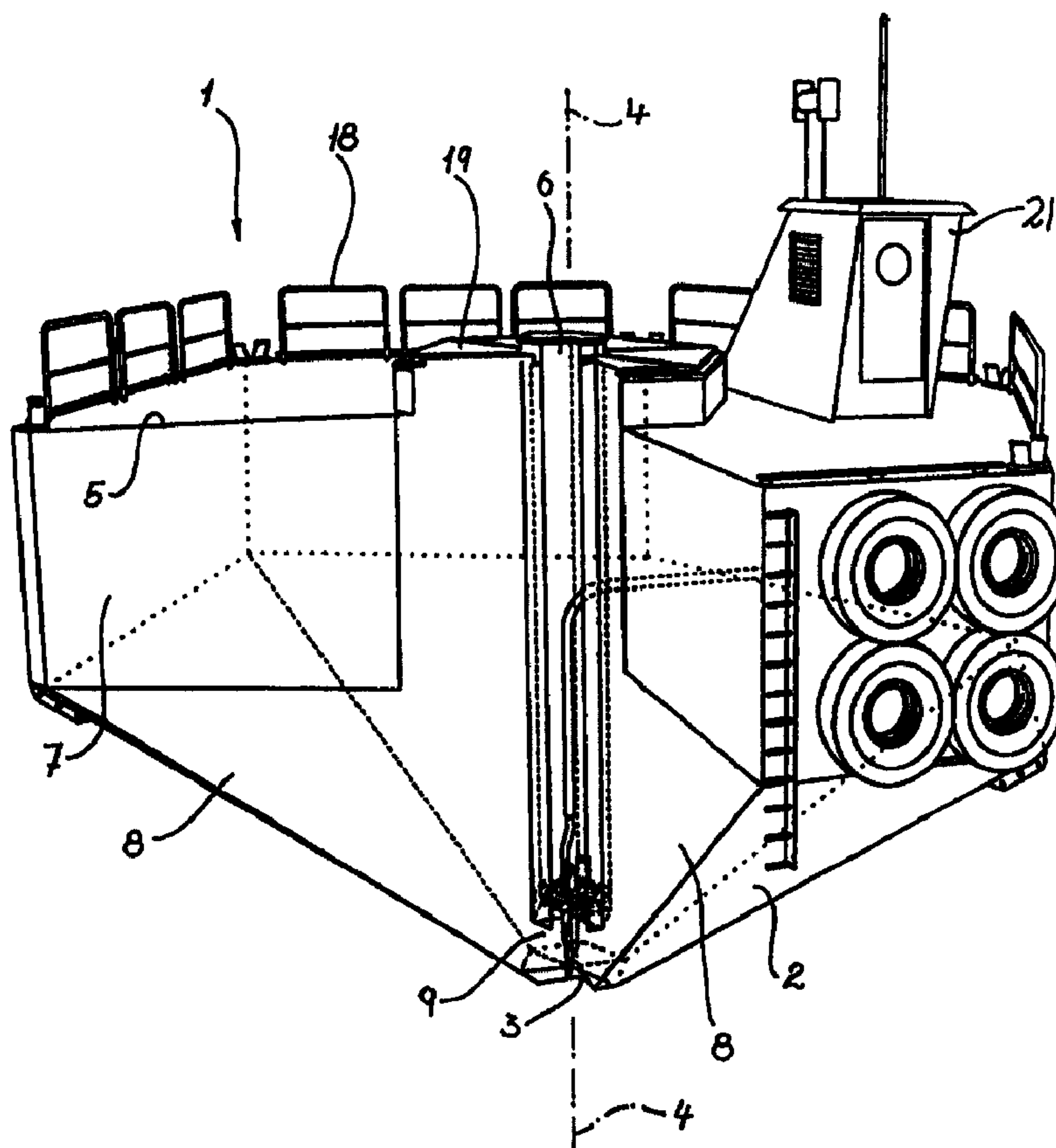




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(54) Titre : AMENAGEMENTS APPORTES A UNE BARGE DE PISCICULTURE
 (54) Title: ARRANGEMENTS IN A BARGE FOR BREEDING PURPOSES



(57) Abrégé/Abstract:

Arrangements in barge (1) for breeding purposes, the barge (1) comprising internal silos (8) for storing pelletised feed placed along the outer walls of the barge (1) and such that an open room remains inside the silos (8), in the central part of the barge (1); where the barge (1) is provided with a funnel-shaped bottom (2) having a lowermost bottom point (3) at the central vertical axis (4) of the

(57) **Abrégé(suite)/Abstract(continued):**

barge, and where each silo (8) is provided with a sloping bottom face substantially extending parallel to the bottom (2) of the barge (1) beneath the silo (8), so that the lowermost point of the silo (8) is spaced from the vertical axis (4) of the barge (1) and somewhat higher than the bottom point (3) of the barge (1), and where each silo (8), next to its lowermost point, is provided with an aperture (11) for taking out feed, and where in said open room inside the silos (8), means (12, 13, 14, 15, 16, 17) is disposed, said means being adapted to convey feed to feeding accessory placed at a higher level within the barge (1). The aperture (11) of each silo (8) is in communication with a bin (9) placed closer to the central vertical axis (4) of the barge (1), so that feed may flow from the silo (8) into the bin (9).



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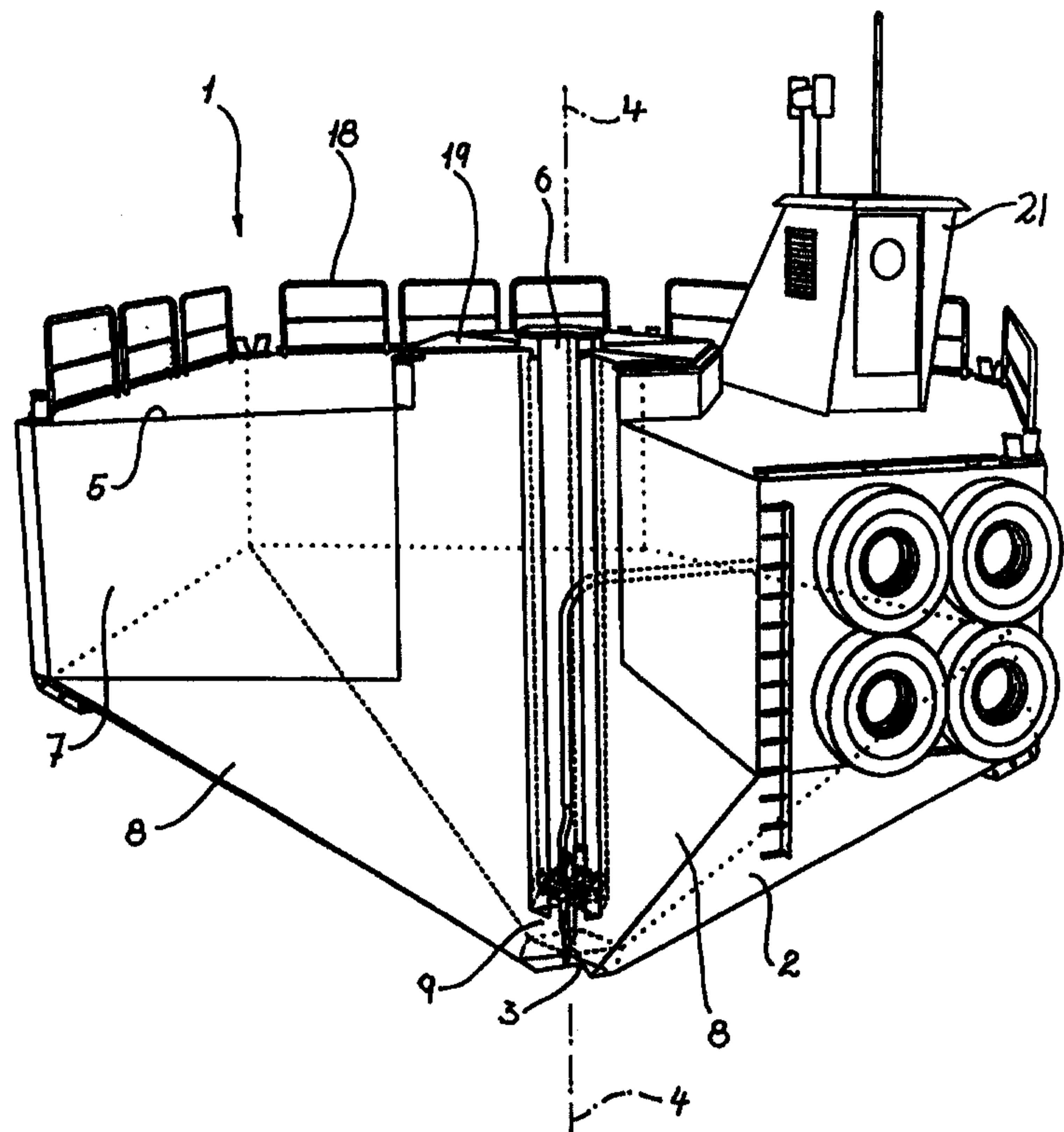
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(54) Title: ARRANGEMENTS IN A BARGE FOR BREEDING PURPOSES

(57) Abstract

Arrangements in barge (1) for breeding purposes, the barge (1) comprising internal silos (8) for storing pelletised feed placed along the outer walls of the barge (1) and such that an open room remains inside the silos (8), in the central part of the barge (1); where the barge (1) is provided with a funnel-shaped bottom (2) having a lowermost bottom point (3) at the central vertical axis (4) of the barge, and where each silo (8) is provided with a sloping bottom face substantially extending parallel to the bottom (2) of the barge (1) beneath the silo (8), so that the lowermost point of the silo (8) is spaced from the vertical axis (4) of the barge (1) and somewhat higher than the bottom point (3) of the barge (1), and where each silo (8), next to its lowermost point, is provided with an aperture (11) for taking out feed, and where in said open room inside the silos (8), means (12, 13, 14, 15, 16, 17) is disposed, said means being adapted to convey feed to feeding accessory placed at a higher level within the barge (1). The aperture (11) of each silo (8) is in communication with a bin (9) placed closer to the central vertical axis (4) of the barge (1), so that feed may flow from the silo (8) into the bin (9).



ARRANGEMENTS IN BARGE FOR BREEDING PURPOSES

The invention relates to arrangements in or relating to a barge for breeding purposes, the barge comprising fodder storage and, preferably, including a feeding plant for feeding fish.

In modern breeding of fish, especially salmon, it is usual to keep the fish in a net in the sea. Feeding is often carried out by means of a central feeding plant, from now on called feeding plant, dosing pelletised feed from a fodder storage through hoses to the fish. Typically, one hose extends from the feeding plant to each net and feed is conveyed by means of a water flow or a flow of air within the hose.

As the hoses, due to practical reasons, cannot be too long, it is usual to dispose fodder storage and feeding plant in a floating structure, from now on called barge, which is anchored adjacent the nets when these are placed far out. Also, barges are utilised when it is impractical to dispose fodder storage and other accessory on shore.

Fodder storage and feeding plant have been installed on a plurality of types of floating structures, everything from

simple barges to discarded whaleboats and car ferries. There also exist barges made specially for the purpose.

A common feature of said barge structures is that the fodder storage comprises one or more silos, each comprising a cylindrical or prism-shaped tank, where the lower part passes into a funnel having an outlet at the bottom. The outlet is coupled to a mechanical dosing device below the silo, typically a conveyor screw or a sluice device in combination with an expansion chamber.

10 The dosing device can be coupled to a conveyor, e.g. a conveying belt or a screen conveying feed from the silo to the feeding plant which sluices the feed into an air flow or a water flow, for further conveyance to the nets through hoses such as previously mentioned. Usually, dosing takes place in
15 that the control device of the feeding plant starts or stops the dosing device.

In practice, one tries to avoid extra conveyors between silo and feeding plant, because extra mechanical strain results in the crushing of feed pellets and, thus, an economical loss.
20 Therefore, the feeding plant is mounted close to the outlet from the silos.

Accessory mounted below the silos, i.e. dosing device inclusive expansion chamber and, normally, also parts of the feeding plant, results in the need for a dry room below the silos. This can be achieved in that the silos are mounted at so
25 high a level within the barge that space remains for dosing device and feeding plant at the bottom of the barge, below the silos.

Also, it is known to arrange a separate room for feeding
30 plant, or parts of a feeding plant, underneath the barge, as an additional structure underneath the barge's bottom. Such a

solution is described in Norwegian patent number 179,431, in which it also has been indicated a possibility of arranging an access shaft to the dry room through the barge's deck and through the barge's bottom. In connection with such a solution, a large part of the barge's volume below deck can be used as fodder storage.

The solution known from NO 179,431 has several disadvantages. Firstly, there must exist a through passage for feed in the barge bottom and down to the feeding plant within the dry room. Secondly, said additional structure destroys the seaworthiness of the barge. Thirdly, the additional structure does not allow the barge to be brought into dock in an ordinary way, unless the additional structure is shaped and designed such that it can accommodate the weight of the entire barge, and the additional structure becomes, therefore, very expensive.

The object of the invention is to provide an arrangement in a barge in which said disadvantages have been avoided.

The object is achieved through features as defined in the following description and claims.

In a barge according to the invention, dosing device and feeding plant have been placed dry above the outlet of the silos, so that there is no need for a dry room below the silos.

Close to the bottom, each silo is next to a bin where gravity makes feed to flow from the silo into the bin through an aperture in the silo wall/bin wall. The silo may advantageously have an asymmetrical funnel, so that the silo, at one side thereof, will exhibit a vertical wall from top to bottom, and so that the bin is next to the vertical wall adjacent the bottom of the silo. The aperture in the silo wall is immersed

in feed during operation, the level within the bin raises to a somewhat higher level than the upper edge of the aperture. The size of the aperture may advantageously be adjustable vertically, so that the degree of filling in the bin can be
5 adjusted.

By means of under pressure, feed is sucked up from the bin to the feeding plant. All feeding accessory is placed at a higher level than the silo outlet, e.g. on deck. As feed is brought up from the bin, the latter is replenished with feed
10 from the silo beside it.

In the following, the invention is further described by means of an exemplary embodiment, and reference is made to the attached drawings, wherein:

Figure 1 shows a hexagonal barge seen from above;

15 Figure 2 shows the barge in side elevational view, partially in section;

Figure 3 shows, on a larger scale, a cutting out of the barge with a portion of a dosing device.

In figure 1, reference numeral 1 denotes a barge having a
20 hexagonal base, where the lower part of the barge 1 is shaped as a hexagonal funnel forming the bottom 2 of the barge 1, having its lowermost point 3 at the vertical central axis 4 of the barge 1.

From an upper deck 5, a vertical shaft 6 extends downwardly,
25 opening a distance above the lowermost point 3 of the barge, see figure 2.

Radial partition walls 7 between the shaft 6 and each barge corner divide the barge 1 into a plurality of rooms, of which at least one constitutes a silo 8. The dbarge 1 shown in the figures, has six silos 8. A possible superstructure having
5 living room and engine room, has not been shown.

Below the lower end of the shaft 6, each partition wall 7 extends further radially in beneath the shaft toward the central axis 4 of the barge 1, where the partition walls meet.

That portion of the partition walls 7 falling within the
10 shaft 6 defines, thus, a sector-shaped bin 9 which, at the periphery thereof, is open toward each silo 8 of its own. Access to the bins 9 is from above through the shaft 6. Feed (not shown) flows due to gravity and the sloping bottom 2 of the barge 1, from each silo 8 into the bin 9 belonging
15 thereto.

In the upper portion of the aperture 11 between silo 8 and bin 9 one may, as previously mentioned, dispose a displaceable, not shown hatch, in order to control the level of feed within the bin 9.

20 Within each bin 9, a vertical suction pipe 12 has been disposed, the lower end thereof opening next to the bottom of the barge 1, preferably in the area where the bin 9 has its largest depth. Each suction pipe 12 can be passed up through the shaft 6 and assigned to a feeding plant (not shown) of a
25 known type, at a higher level within the barge 1.

In a preferred embodiment, relatively short suction pipes 12 are utilised, the upper end thereof opening into a common horizontal plane some distance up in the shaft 6. The suction pipes 12 may advantageously be passed through holes in a support plate 13, so that the upper end of the suction pipes 12
30 is situated in the upper plane of the support plate 13. The

suction pipes 12 are placed in the same radial distance from the centre of the support plate 13, so that they are positioned on an imagined circle. A vertical axis through the centre of the support plate 13 will substantially be coincident with the vertical central axis of the barge 1. The support plate 13 can be attached to the shaft 6 or to the partition walls 7 below the support plate 13.

A turning plate 14 adapted to be rotatable stepwise or continuously about a vertical axis by means of a motor, is mounted above the support plate 13 and seals slidingly against the end of the suction pipes 12.

One end of a S-shaped pipe 15 opens into an opening, not shown, in the turning plate 14. Said opening is placed at the same radial distance as the suction pipes 12 from the centre of the turning plate 14. Upon rotation of the turning plate 14, one end of the S-shaped pipe 15 can be brought to communicate with each of the suction pipes 12.

The other end of the S-shaped pipe 15 is situated at some distance above the turning plate 14 at the central axis thereof, where the S-shaped pipe 15 is rotatably connected to one end of a main pipe 16, so that the S-shaped pipe 15 can rotate together with the turning plate 14 while the main pipe 16 remains stationary. The other end of the main pipe 16 is connected to a vacuum device, not shown, capable of sucking feed through the suction pipe 12 with which the S-shaped pipe 15 communicates.

Thus, by turning the turning plate 14, feed might be fetched from an optional silo 8. To the turning plate 14 is assigned a motor 17 controlled from a feeding plant, not shown, of a type known per se, but where the feeding plant advantageously may be coupled to a heeling sensor, not shown, and adapted to distribute feed tappings among several silos 8, so that the barge 1 does not take a list.

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With reference to figures 1 and 2, 21 indicates a superstructure, 18 a rail and 19 a hatch on top of a silo opening for filling up.

WHAT IS CLAIMED IS:

1. Arrangements in a barge for breeding purposes, the barge comprising internal silos for the storage of pelletised feed placed along the outer walls of the barge and such that an open room remains on the inside of the silos in the central part of the barge; wherein the barge is provided with a funnel-shaped bottom having a lowermost bottom point at the central vertical axis of the barge, and wherein each silo is provided with a sloping bottom face which substantially extends parallel to the bottom of the barge beneath the silo, so that the lowermost point of the silo is spaced from the vertical axis of the barge and somewhat higher than the bottom point of the barge, and wherein each silo close to its lowermost point is provided with an aperture for taking out feed; and wherein, in said open room on the inside of the silos, means have been disposed, adapted to convey feed to feeding accessory placed higher up within the barge, characterized in that the aperture of each silo is in communication with a bin/hopper placed in close proximity to the central vertical axis of the barge, so that feed can flow from the silo into the bin.
2. Arrangements as set forth in claim 1, wherein a suction pipe and a vacuum device are provided for drawing feed from each bin.
3. Arrangements as set forth in claim 2, characterized in that each suction pipe is in connection with a selecting device adapted to connect an optional suction pipe to a main pipe coupled to the vacuum device.
4. Arrangements as set forth in claim 1, characterized in that the barge is provided with internal radial partition walls extending from the outer wall of the barge inwardly toward the open room, dividing the barge into sector-shaped rooms.
5. Arrangements as set forth in claim 4, characterized in that the sector-shaped rooms form the silos, each room being provided with a wall defining the

sector-shaped room toward the open room inside the silos, the aperture being made in the wall.

6. Arrangements as set forth in claim 5, characterized in that the barge has a polygonal base, and that the partition walls extend radially from the corners of the barge.

7. Arrangements as set forth in claim 1, characterized in that the vertical extent of the aperture is adjustable, in order to enable the establishment of the highest feed level in the bin.

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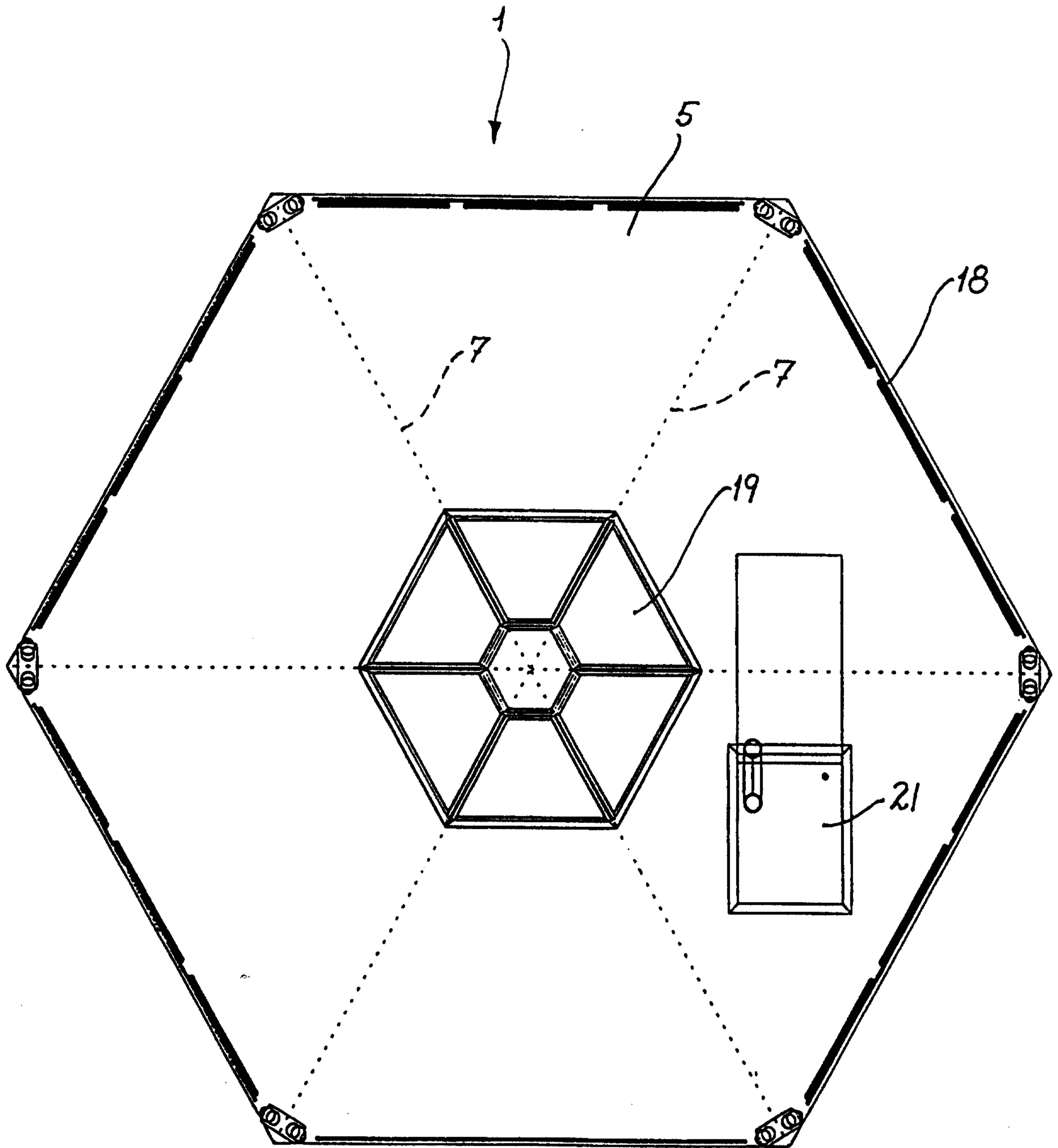


Fig. 1

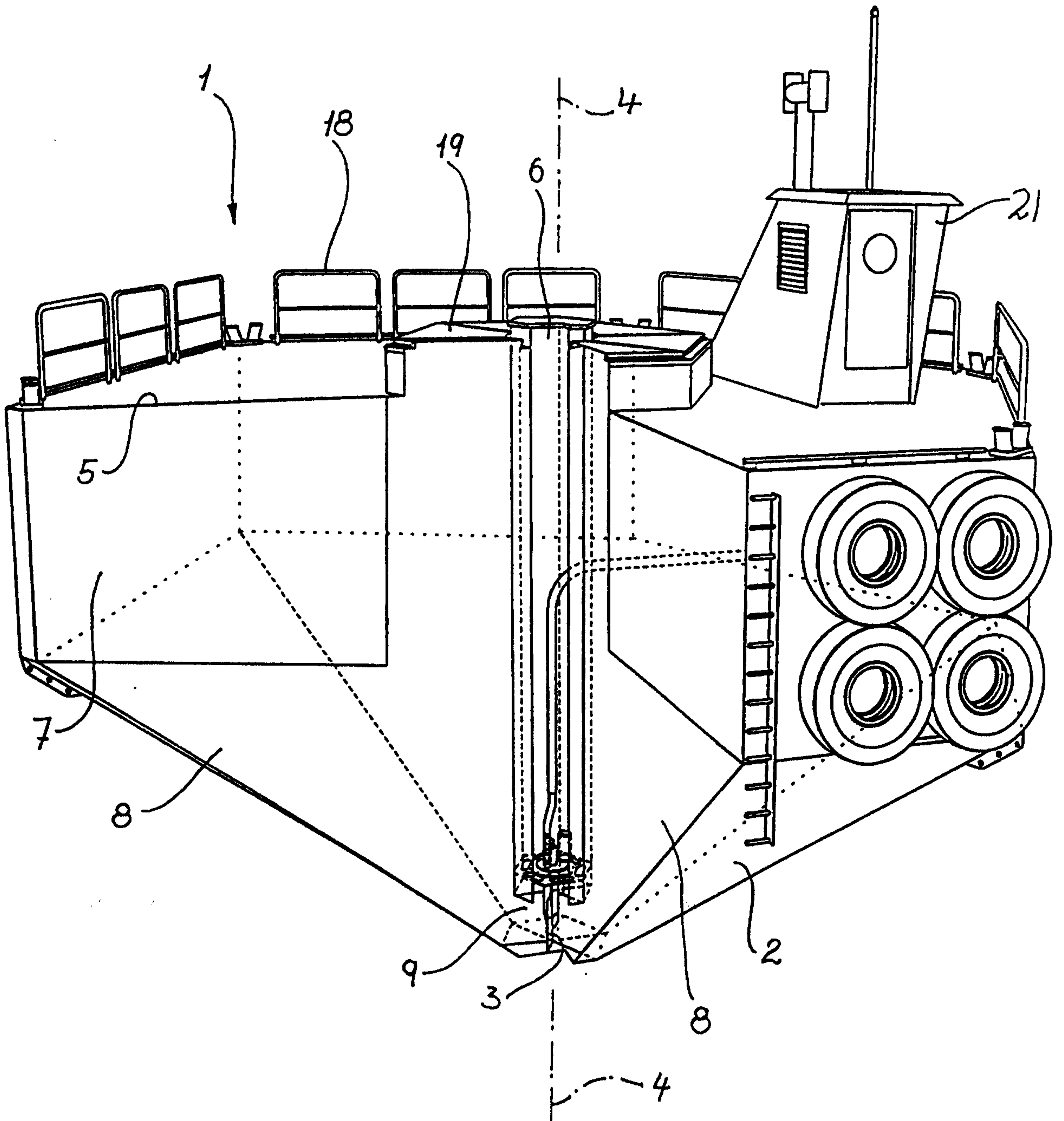


Fig. 2

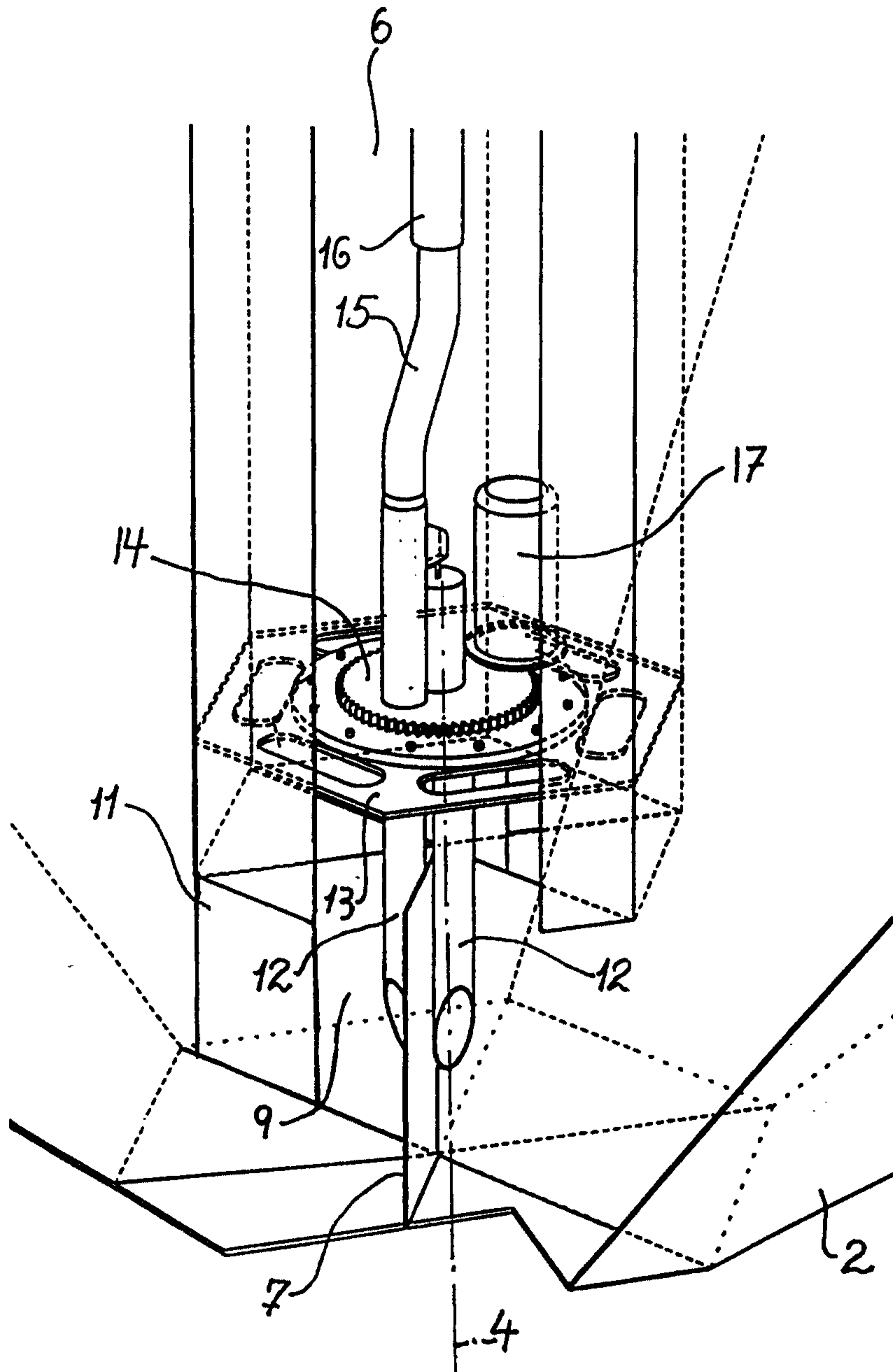


Fig. 3

