

## **ELEVATOR TRACTION MACHINE ASSEMBLY ARRANGEMENT ABOVE ELEVATOR COUNTERWEIGHT AND CAR**

This invention is specially devised in order to provide arrangement plan of an elevator traction machine above elevator counterweight and car.

For a traditional elevator, it has to be considered to invest a considerable cost in the construction of a machine room. This invention will provide arrangement plan of an elevator traction machine above elevator counterweight and car so that the elevator with this invention mentioned arrangement is a kind of elevator without machine room.

The following advantages can be achieved by applying this invention:

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The arrangement plan of this invention has an advantage that the cost of construction of machine room of traditional elevator can be reduced obviously.

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The arrangement plan of this invention has a second advantage that the space of machine room of traditional elevator can be saved.

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The arrangement plan of this invention has a third advantage that the look of top of building can be more improved because the building will not need a bulgy top for a machine room of elevator.

In this invention, following schematics will help to describe this invention in detail:

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FIG.1 presents the top plan view of the traction machine arrangement above the counterweight and car of this invention.

FIG.2 presents the side plan view of the FIG.1 with an overslung roping.

FIG.3 presents the other side pan view of FIG.1.

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FIG.4 presents the side plan view of a second embodiment of this invention illustrating an underslung roping configuration.

FIG.5 presents the top plan view of the FIG.4

FIG.6 presents the fixing position of the traction machine which is applied in this invention.

5 The traction machine arrangement according to this invention is presented in FIGS.1-2-3 diagrammatically.

The elevator with the traction machine arrangement of this invention runs in hoistway 200 surrounded by structure 100. The structure 100 has sidewalls 201, 202, 203, 204.

10 At the top portion of sidewall 201, there is the support hole 5 shown in FIG.3.

At the top portion of sidewall 203, there is the support hole 6 shown in FIG.3.

15 The support hole 5 is symmetrical with the support hole 6 on the opposite sidewalls 201, 203.

20 The traction machine assembly 99 contains traction machine 1 with a driving sheave 2, support members 3, 4 and ropes plate 7. The traction machine 1 with a driving sheave 2 is fixed on two support members 3, 4 at the two sides of the traction machine 1 with bolts. The two ends of the support members 3, 4 are located in the support holes 5, 6 of sidewall 201, 203 in the structure 100.

25 The projection of the traction machine assembly 99 overlaps with the projection of elevator car 10 and elevator counterweight 11.

The supporting members 3, 4 are substantially parallel to the centerline 301 of the elevator car 10.

30 The elevator car 10 is suspended by traction ropes 12 by means of car top pulleys 13 and 14, and runs upwardly or downwardly along car guide rails 40, 41.

The elevator counterweight 11 is suspended by traction ropes 12 by means of counterweight top pulley 15 and runs upwardly or downwardly along counterweight guide rails 42, 43. The number of steel traction ropes is usually at least 3.

One end of the traction ropes 12 is fixed on the ropes plate 7 of traction machine assembly 99, the other end of the traction ropes 12 is fixed on the top portion of the hoistway. As shown in FIG.2-3, the elevator car 10 is overslung.

- 5 The direction of the diameter of the driving sheave 2 of the machine 1 is substantially vertical to the plane between counterweight guide rails 42, 43.

FIG.4-5 presents the second embodiment of this invention illustrating an underslung roping configuration.

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The elevator with the traction machine arrangement of this embodiment runs in hoistway 200 surrounded by structure 100. The structure 100 has sidewalls 201, 202, 203, 204.

- 15 At the top portion of sidewall 201, there is the support hole 5 shown in FIG.5.

At the top portion of sidewall 203, there is the support hole 6 shown in FIG.5.

- 20 The support hole 5 is symmetrical with the support hole 6 on the opposite sidewalls 201, 203.

- 25 The traction machine assembly 99 contains traction machine 1 with a driving sheave 2, support members 3, 4 and ropes plate 7. The traction machine 1 with a driving sheave 2 is fixed on two support members 3, 4 at the two sides of the traction machine 1 with bolts. The two ends of the support members 3, 4 are located in the support holes 5, 6 of sidewall 201, 203 in the structure 100.

- 30 The projection of the traction machine assembly 99 overlaps with the projection of elevator car 10 and elevator counterweight 11. The supporting members 3, 4 are substantially parallel to the centerline 301 of the elevator car 10.

The elevator car 10 is suspended by traction ropes 12 by means of pulleys 16, 17 and runs upwardly or downwardly along car guide rails 40, 41. The pulleys 16, 17 are under the elevator car. The alignment line of the pulleys 16 and 17 goes through a point directly below the gravity point of the elevator car.

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The elevator counterweight 11 is suspended by traction ropes 12 by means of counterweight top pulley 15 and runs upwardly or downwardly along counterweight guide rails 42, 43. The number of steel traction ropes is usually at least 3.

10 One end of the traction ropes 12 is fixed on the ropes plate 7 of traction machine assembly 99, the other end of the traction ropes 12 is fixed on the top portion of the hoistway. As shown in FIG.5, the elevator car 10 is underslung.

The direction of the diameter of the driving sheave 2 of the machine 1 is substantially  
15 vertical to the plane between counterweight guide rails 42, 43.

FIG.6 shows the fixing position of the traction machine which is applied in this invention.

The machine shown in FIG.6 is a kind of gearless machine. On the opposite sides of the  
20 machine, thread holes 66 are used to connect the traction machine to the support members 3, 4.

The Claims defining the invention are as follows:

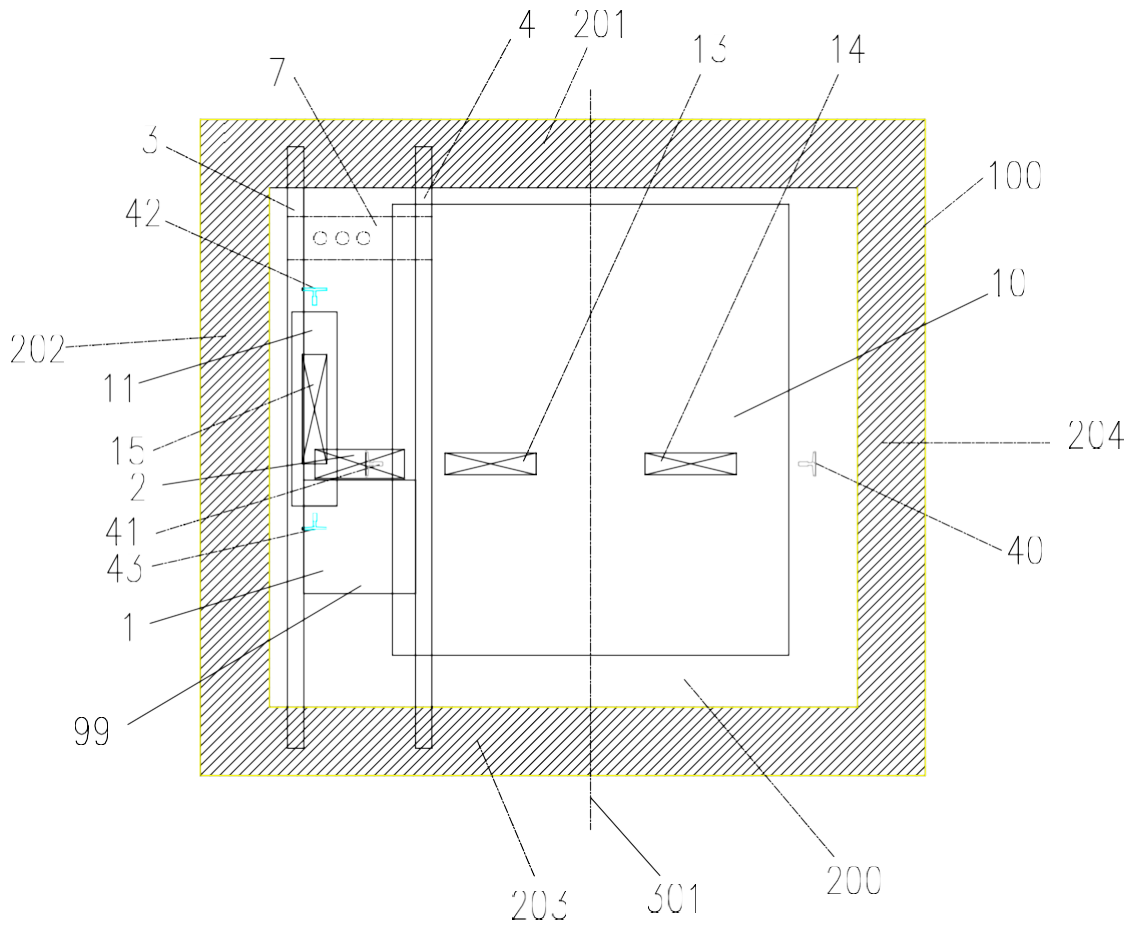
25 1. Elevator traction machine assembly arrangement comprising a traction machine assembly positioned above elevator counterweight and car in a hoistway with surrounded structure.

2. Elevator traction machine assembly arrangement as defined in claim 1, wherein the  
30 traction machine assembly is positioned on the top portion of the hoistway by positioning the ends of the traction machine assembly in the support holes of two opposite sidewalls of the hoistway. The support holes of two opposite sidewalls are symmetrical and at the top portion of the sidewalls.

3. Elevator traction machine assembly arrangement as defined in claim 1 and 2, wherein the support members of traction machine assembly are substantially parallel to the one of the centerlines of the elevator car. The projection of the elevator traction machine assembly overlaps the projection of the elevator car and  
5 the projection of the elevator counterweight.
4. Elevator traction machine assembly arrangement as defined in claim 1 2 and 3, wherein the direction of the diameter of the driving sheave 2 of the machine 1 is substantially vertical to the plane between counterweight guide rails 42, 43.  
10
5. Elevator traction machine assembly arrangement as defined in claim 1, 2 and 3, wherein the traction machine is fixed between support members of traction machine assembly. One end of the traction ropes is fixed to the rope plate on the traction machine assembly.  
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6. Elevator traction machine assembly arrangement according to any one of preceding claims, wherein the elevator car is suspended by traction ropes using at least one pulley on the top of the elevator car.  
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7. Elevator traction machine assembly arrangement according to any one of preceding claims, wherein the elevator car is suspended by traction ropes using pulleys under the elevator car. The alignment line of the pulleys goes through a point directly below the gravity point of the elevator car.

George Choate  
(Name of Applicant(s))

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(Date)



**FIG.1**

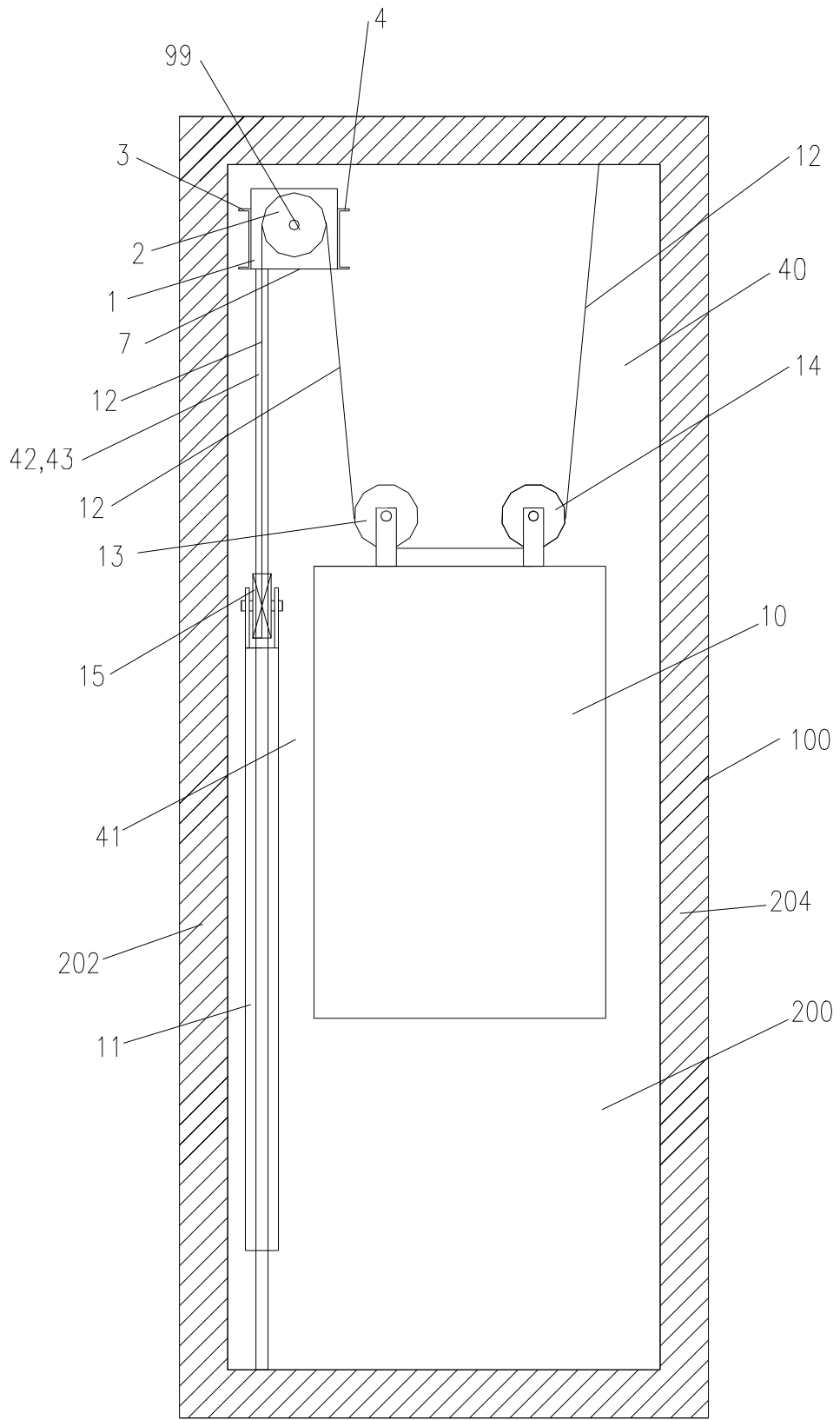
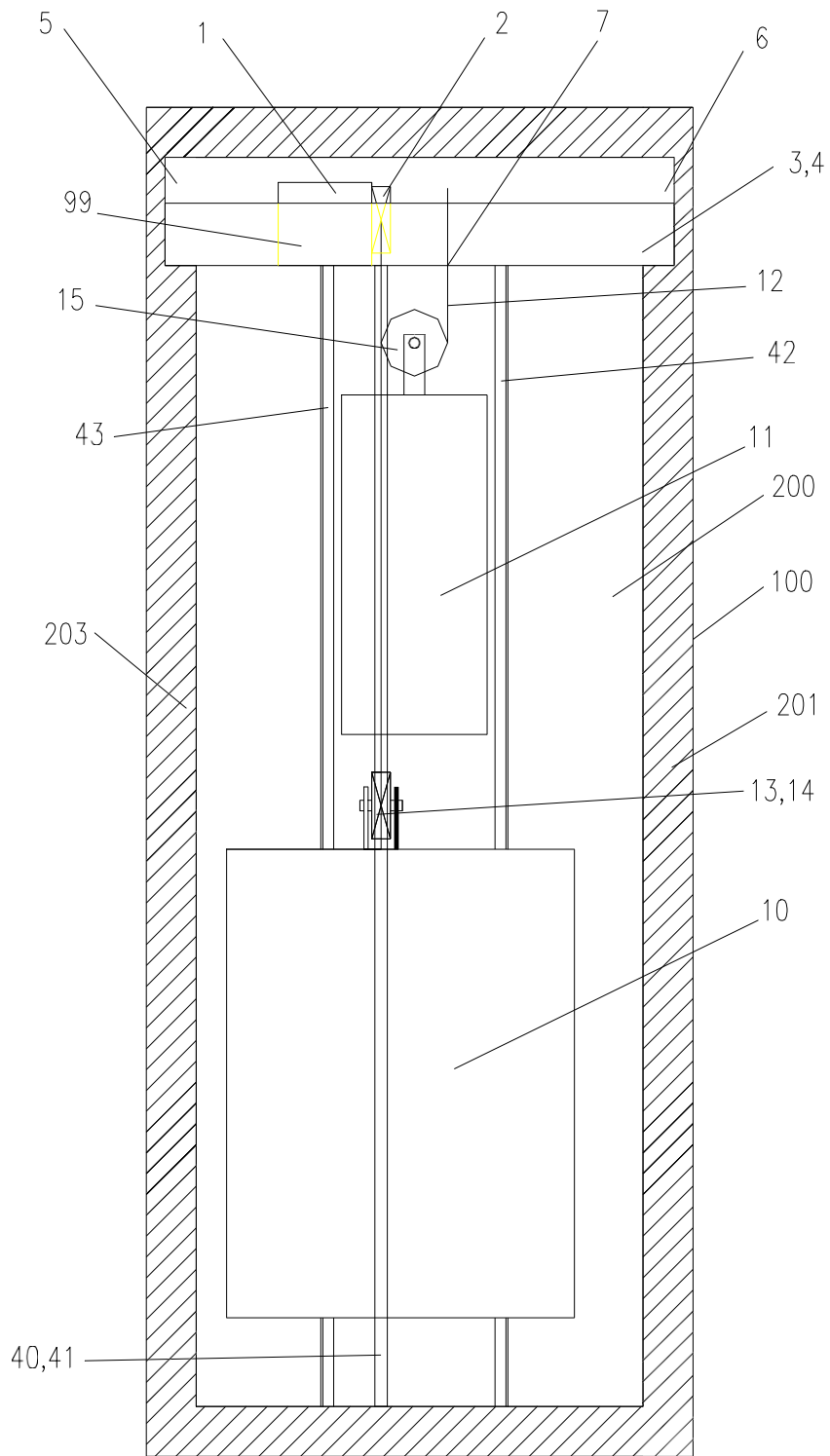


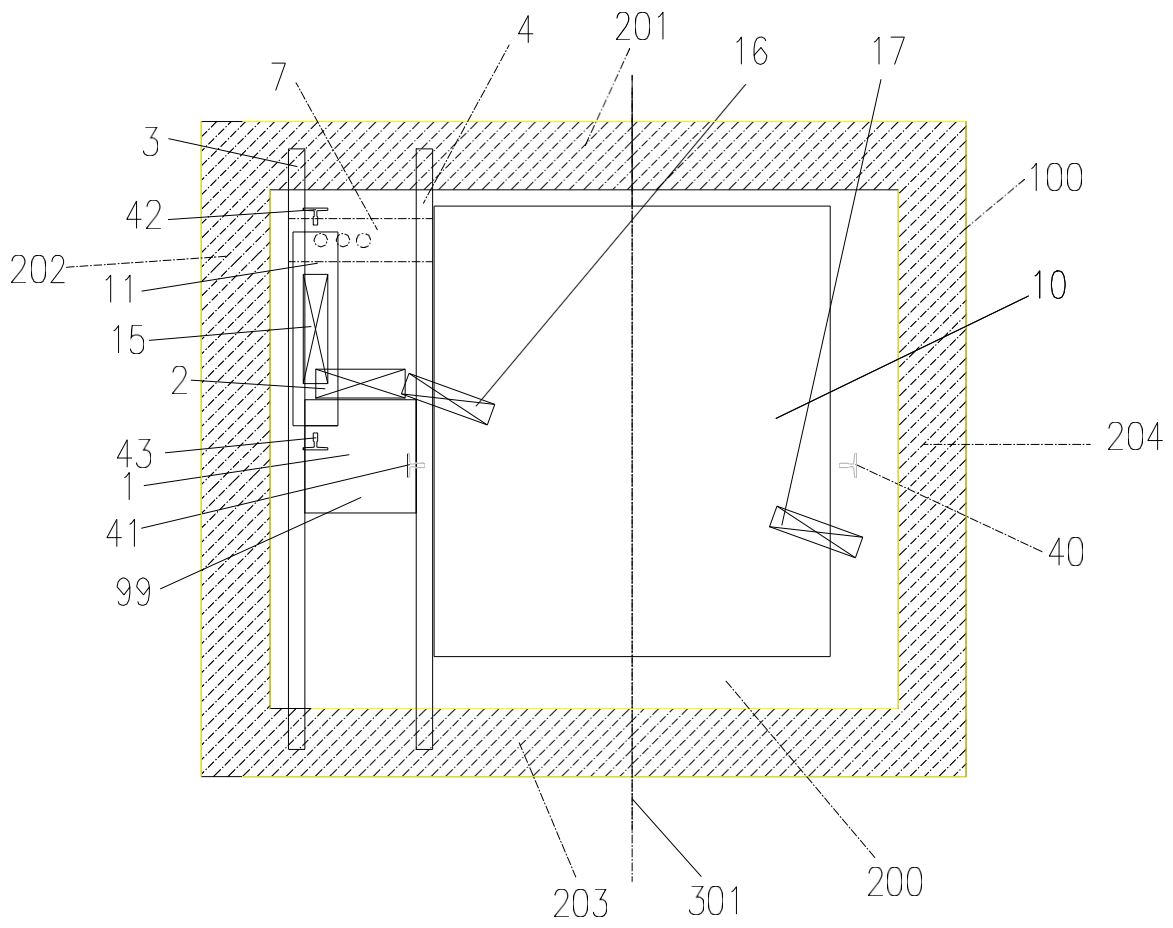
FIG.2



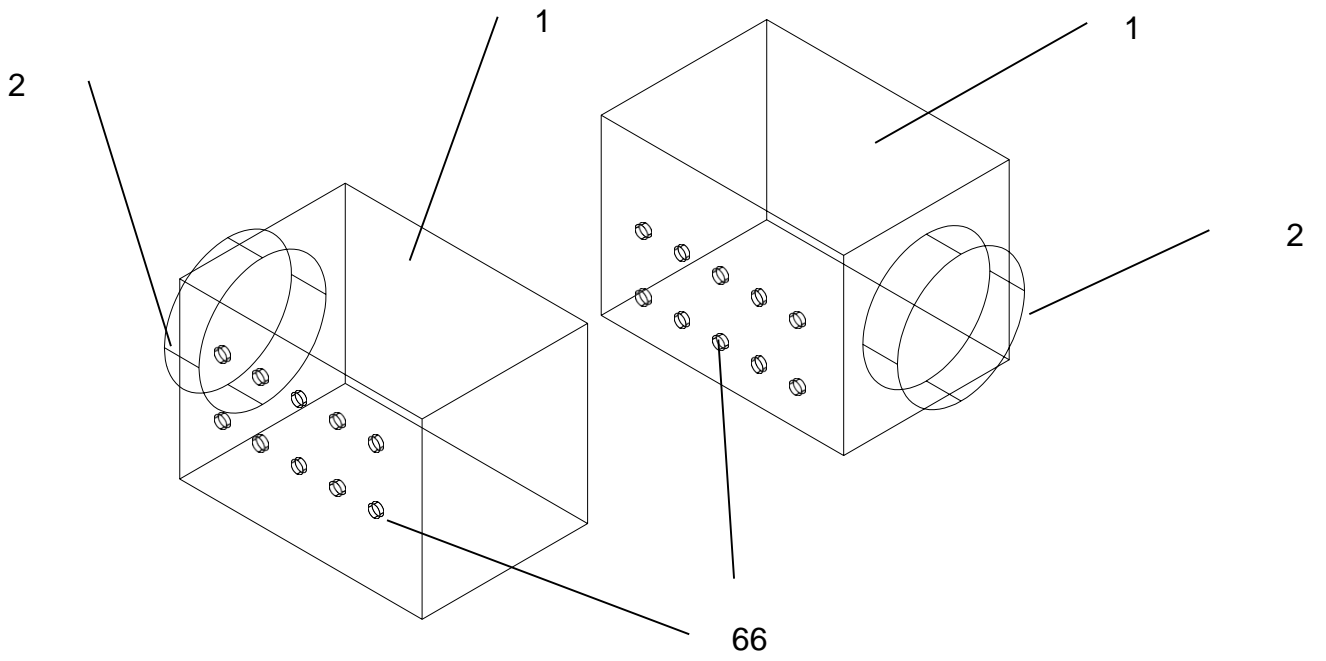
**FIG.3**







**FIG.5**



**FIG.6**