# PATENT SPECIFICATION

Convention Date (Netherlands): Nov. 7, 1928. **342,752**

Application Date (in United Kingdom): Nov. 2, 1929. No. 33,433/29.

Complete Accepted: Feb. 2, 1931.

COMPLETE SPECIFICATION.

## Garage for Motor Cars with Hoisting Device for Motor Cars.

I, HEERE VAN DER SCHAAR, a subject of the Queen of the Netherlands, of 15, Jan Willem, Brouwersplein, Amsterdam (Z), The Netherlands, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to sling devices for cars and the like and is particularly adapted for use in garages where space is limited and it is desired to hoist cars to any particular floor for storage purposes.

The object of the invention is a form of sling gear which shall be simple, efficient and quick in operation, which shall require a minimum number of operatives and which shall be capable of hoisting a car vertically, transporting it horizontally, and slewing it, if necessary round a vertical axis.

The invention consists in a sling device for cars and the like in which from a hoisting cable two pairs of bars are suspended, rotatable round horizontal axes and preferably counter-balanced and of which each pair is at the end provided with a connecting beam having supporting racks for the wheels.

According to the invention a sling device of the proposed type is adapted for use in a building having a central well and a series of floors on each side of the well, each floor having a number of cubicles each large enough to hold conveniently, one car. The device is situated over the well and a car run into the building on the ground floor may then be slung, hoisted vertically by the device and if necessary slewed so that the car may be run into the vacant cubicle.

The invention will now be described with reference to the accompanying drawings in which:—

Figure 1 a sling device in diagrammatic form,

Figures 2 and 3 side elevations of the sling device,

Figure 4 a part front view of the cross beams of the sling device,

Figure 5 a cross section of the cross beams,

Figure 6 a side elevation of the complete sling device,

Figure 7 a cross section of Figure 6, and

Figure 8 a part cross section to a larger scale of the slewing mechanism.

A simple constructional form of a sling device according to the invention is shown diagrammatically in Figure 1. The cable 5 is suspended from a pulley which may for instance be actuated electrically and is movable along a rail which is secured to the roof lengthwise of the gangway. A U-shaped bar of metal 6 is rotatably suspended from the cable 5 and possesses at both sides a spindle 7. On these spindles two pairs of metal bars 8 and 9 are placed, whilst the cross-beams 12 of both pairs of bars are formed in the manner shown in Figures 4 and 5. Both pairs of bars 8 and 9 extend beyond the spindles, so that they may be provided with counterweights in order to facilitate their operation.

Figure 4 shows a front view and Figure 5 a cross section of the cross-beams of both pairs of bars 8 and 9. A plate 11 is rotatably secured to the end of each of the pairs of bars 8 and 9. These plates 11 are connected with each other by a beam 12, which at a short distance from the plates 11 is connected by cross-bars 13 to two plates 14 parallel to the beam 12. In this way a rack is formed which is wide enough to form a slipper for the wheels of any car having regard to the differences in gauge or "track" of the wheels.

The plates 11 are moreover provided with a projection extending outwards in order to facilitate the freeing of the racks by means of a crow-bar in case they are pinched between the tyres and the floor.

In actuating this sling device the pair of bars 8, as is shown in Figures 2 and 3, are turned down and brought with the slipper behind the wheels (Figure 2) when the U-shaped bar 6 is lowered sufficiently. Thereupon the other pair of bars 9 are pulled forward and downward, so that the slippers come before the other wheels (Figure 3). By hoisting the cable 5 the slippers are pinched under and against the wheels, the car being lifted up suspended in the slippers. It does not matter whether the centre of gravity of

[*Price* 1/-]

Price 4s 6d

the car is just in the middle or not, because the centre of gravity can always swing towards the perpendicular through the point of suspension.

By the rotatable mounting of the U-shaped bar 6 it is possible to perform easily the necessary rotation of the car in a suspended condition.

When putting the sling device into practice, it is however, desirable to take care that a rotation of the car by itself is not possible. Moreover that the rotation may still be carried out when the car is lifted so high that it is clear of the other cars on the ground floor.

The construction of a device to fulfil the above is shown in Figures 6, 7 and 8. The hoisting cable is double and passed over both pulleys 15. These pulleys are arranged between the beams 16, to which by means of rods 17 a circular rail 18 of H section is suspended. In this circular rail two sets of wheels 19 and 20 revolve, each set of which serve for the suspension of a frame 21, of double U section. In the lower U a continuous axle 22 is arranged, connecting the two frames 21 together. In the lower U each frame is provided with two clutch discs 23, which are rotatably mounted on the axle 22 and may be displaced thereupon till they meet with each other and with a shoulder 24 of the axle 22. The ends of the axle 22 are provided with opposite screw threads, upon each of which a nut is arranged. To one end of the axle 22 a pulley 26 is secured, which may be rotated by means of a belt.

To the disc 23 may be secured pairs of bars 8 and 9 similar to those already mentioned in connection with Figures 4 and 5 and which are provided with counterweights $8^1$ and $9^1$. By the rotation of the pulley 26 the nuts 25 move inwardly and press the discs 23 against each other and against the shoulders 24 of the axle 22, so that the pairs of bars 8 and 9 are held firmly against each other and a protection against a rotation is obtained. Easy operation of the pairs of bars 8 and 9 is obtained by reversing the pulley 26 and by moving the clutch discs 23 free of each other.

By means of the double suspending cable, which is passed over two pulleys situated at some distance from each other a guarantee is obtained against the rotation of the pairs of bars as a whole. To be able to bring the cars into the desired positions (1) in the direction of the gangway between the boxes, and (2) perpendicular thereto, the circular rail 18 is provided with a toothed rim in which the two pinions 27 engage. These pinions are arranged in the upper U-shaped part of the frames 21 and are secured to the axles 28 and 29, which are at their inner ends connected together by means of a set of bevel wheels 30, 31, 32. One of the axles e.g. the axle 28 extends outwards, so that by means of a set of bevel wheels 33 and a rod 34 with a hand-wheel 35 a rotating action may be given to the axles 28 and 29, by which the frames 21 may be moved along the rail 18. Because only the two above mentioned positions of the car are to be taken into consideration, it will be desirable to lock the sling device in these positions e.g. by means of catches engaging the toothed rim and which may be disengaged by means of cord when a motion towards the other position is required.

In Figure 8 a modification of the above device is shown, in which the rotation of the sling device may be obtained from the raising or lowering motion of the whole. The bevel wheel 31 is connected with one side of a friction coupling 36 of which the other side is connected with a pinion 37 in permanent engagement with a pinion 38 which is rotated during the hoisting and lowering e.g. by one of the cable pulleys 15. The side of the coupling which is connected with the pinion 37 is secured to a pivoted lever 39 which may be reciprocated by means of a cord or the like by which the engagement and freeing of the friction coupling is effected.

In this way the desired rotation of the sling device may at any moment of the vertical motion of the hoisting gear be effected.

It will be clear that this rotation of the sling device may be effected by means of a separate electric motor, the switching in and out affording the beginning and the termination of this motion.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A sling device for garages for motor cars in which from a hoisting cable two pairs of bars are suspended rotatable round horizontal axes and preferably counter-balanced, and of which each pair is at the end provided with a connecting beam having supporting racks for the wheels.

2. A sling device as claimed in claim 1, in which the connecting beams are rotatably secured to the ends of the pairs of bars.

3. A sling device as claimed in claims 1 and 2 in which the pairs of bars are suspended from and movable over a rail structure, provided with two pulleys arranged at a distance from each other

and over which the suspending cable is passed.

4. A sling device as claimed in claims 1 to 3, in which the pairs of bars are arranged on an axle common to both by means of discs which may be held firmly against each other.

5. A sling device as claimed in claim 4, in which the ends of the axle carrying the clutch discs are provided with opposite screw threads upon which nuts are arranged so that upon rotation of the axle they push the clutch discs against each other and against shoulders arranged on the axle.

6. A sling device as claimed in claims 1 to 5, in which the circular rail for the suspension of the sling device is provided with a toothed rim with which pinions engage which are rotatably mounted in the frames carrying the pairs of bars, the axles being connected together by means of a set of three bevel wheels of which one may be driven.

7. A sling device as claimed in claim 6, in which one of the bevel wheels is actuated from the ground-floor by means of a hand-wheel.

8. A sling device as claimed in claim 7, in which one of the bevel wheels may be connected to a device for rotating the sling device by means of a friction gear.

9. A sling device as claimed in claim 6, in which one of the bevel wheels is connected with a separate electric motor which can be put in and out of circuit.

10. A sling device as claimed in claims 6 to 9 in which the mounting of the sling device is locked in the positions in which the car hangs lengthwise of the gangway, or in a direction perpendicular thereto.

11. The improved sling device substantially as described and illustrated with reference to the accompanying drawings.

Dated this 1st day of November, 1929.

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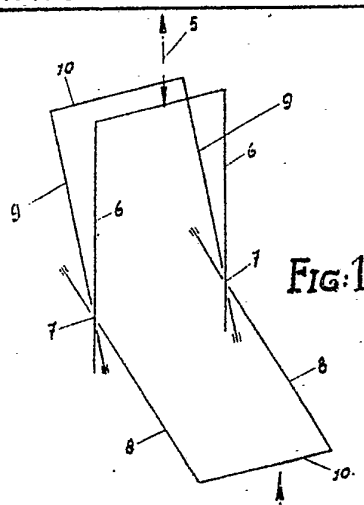



FIG:1.

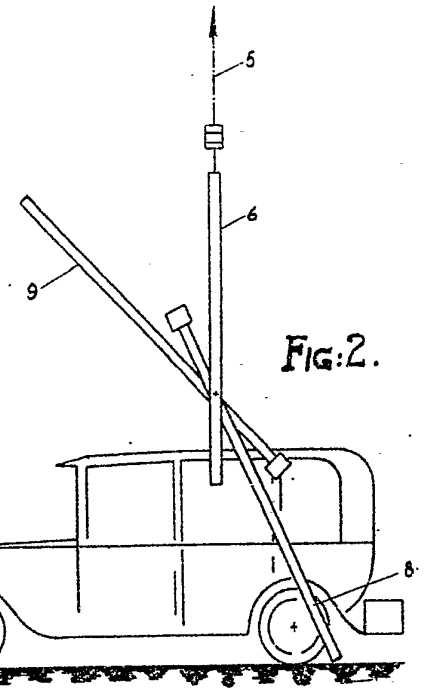



FIG:2.

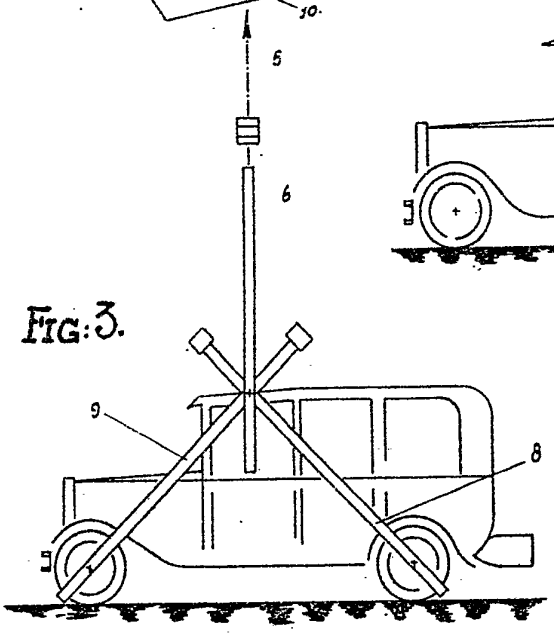



FIG:3.

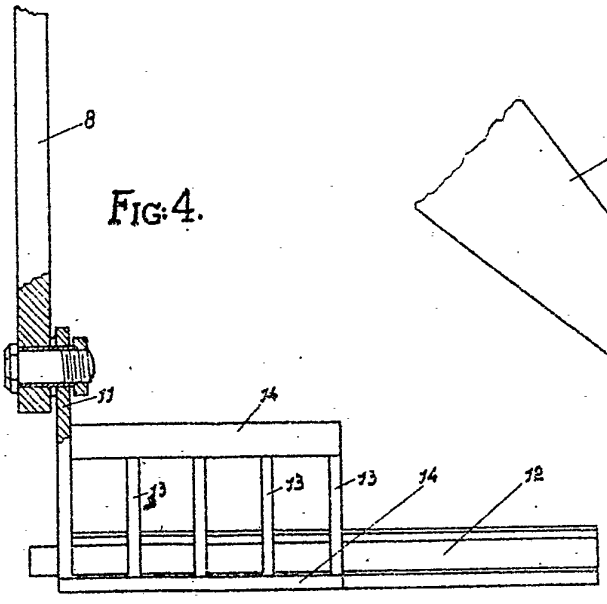



FIG:4.

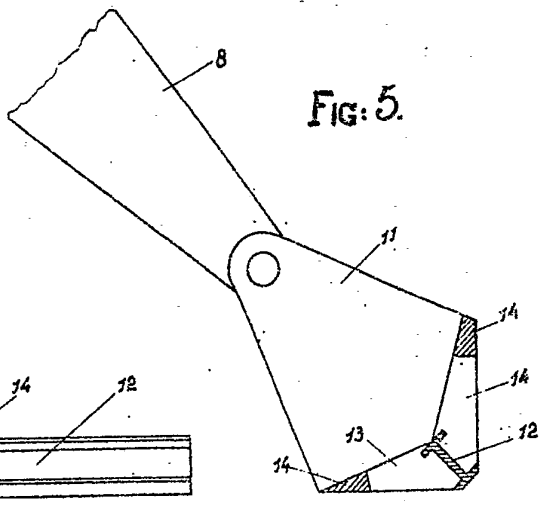
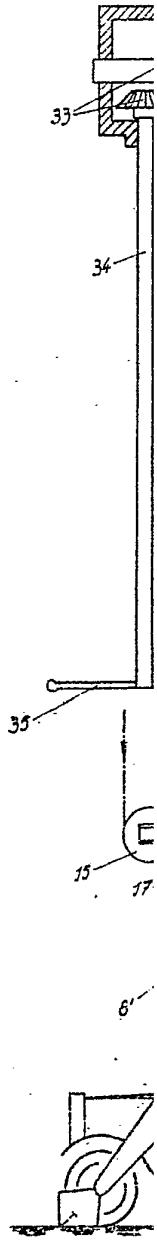



FIG:5.



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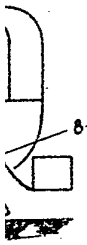
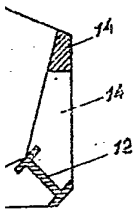


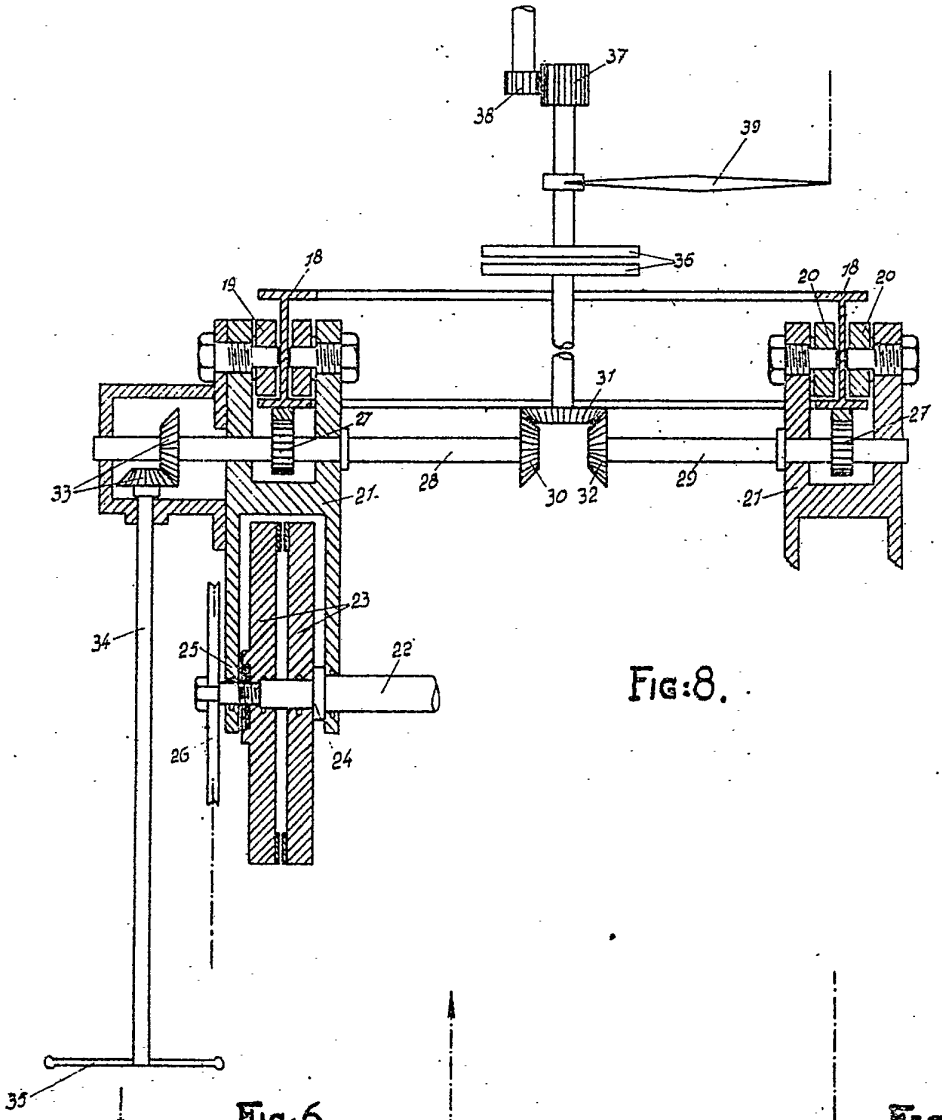




FIG:8.

FIG:6.

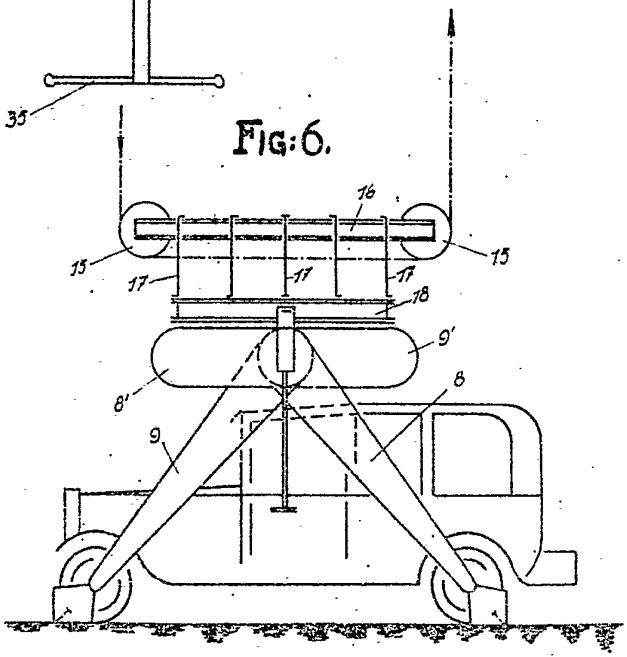
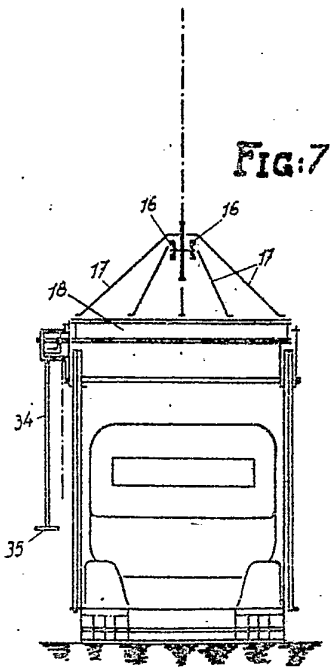



FIG:7

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342,752 COMPLETE SPECIFICATION

SHEET 1

2 SHEETS
SHEET 2

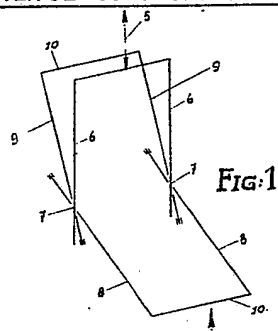

FIG:1.

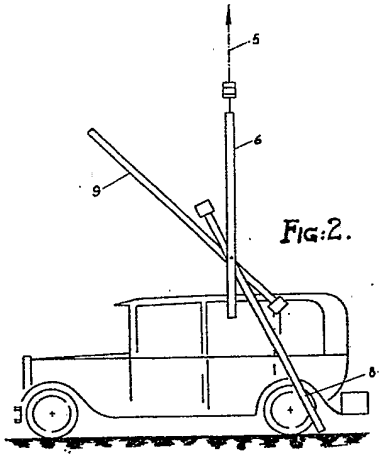

FIG:2.

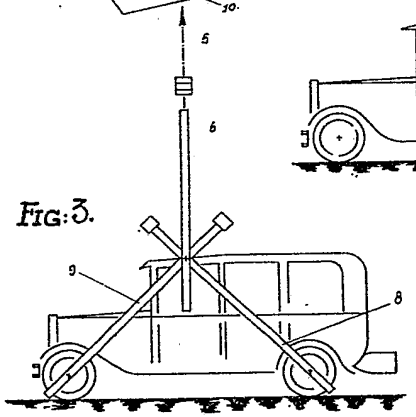

FIG:3.

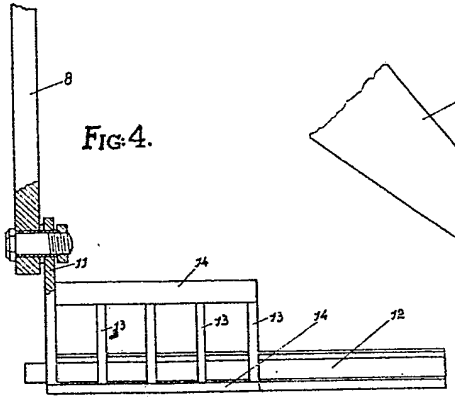

FIG:4.

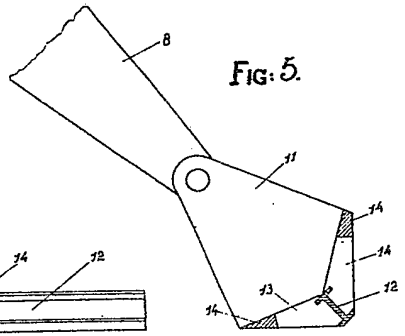

FIG:5.

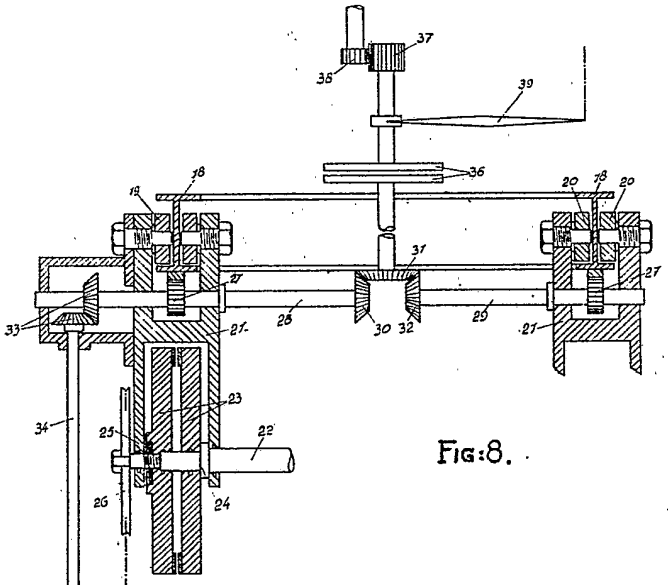

FIG:8.

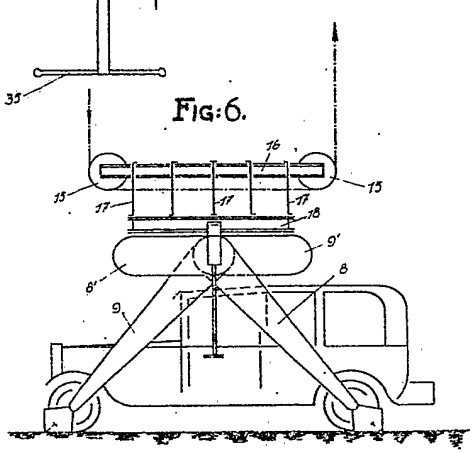

FIG:6.

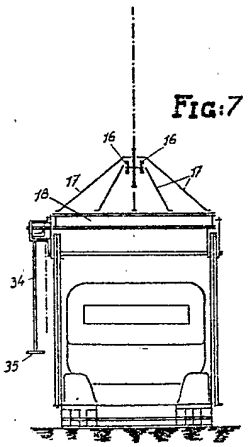

FIG:7

[This Drawing is a reproduction of the Original on a reduced scale]

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