

1,057,831.

Patented Apr. 1, 1913.

2 SHEETS-SHEET 1.

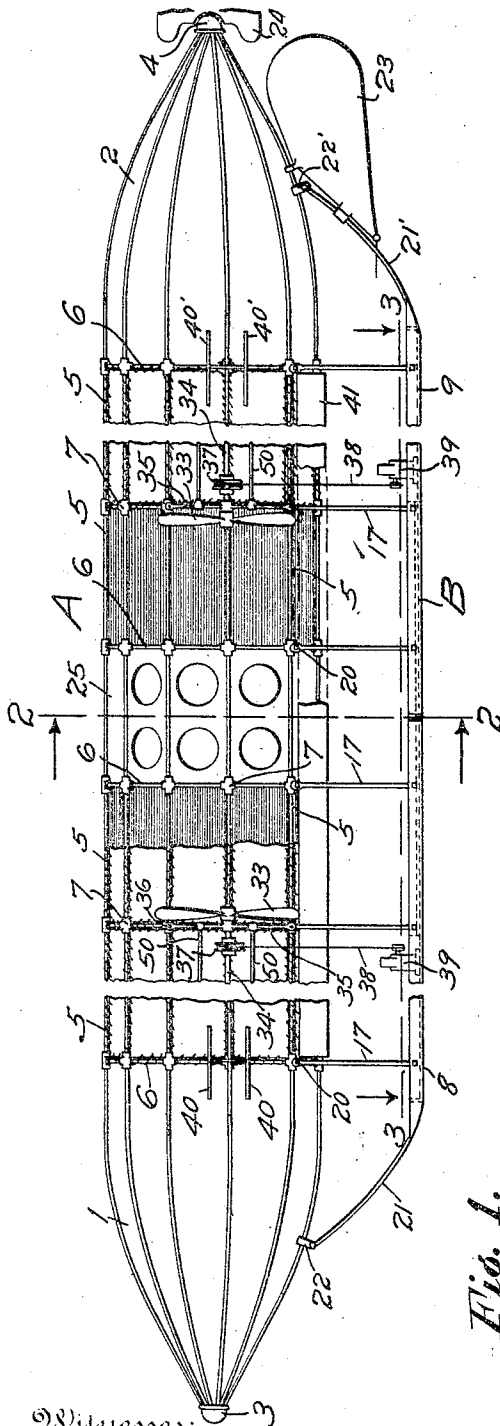


Fig. 1.

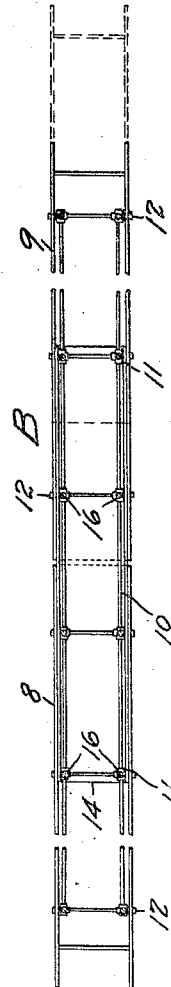


Fig. 3.

Witnesses:

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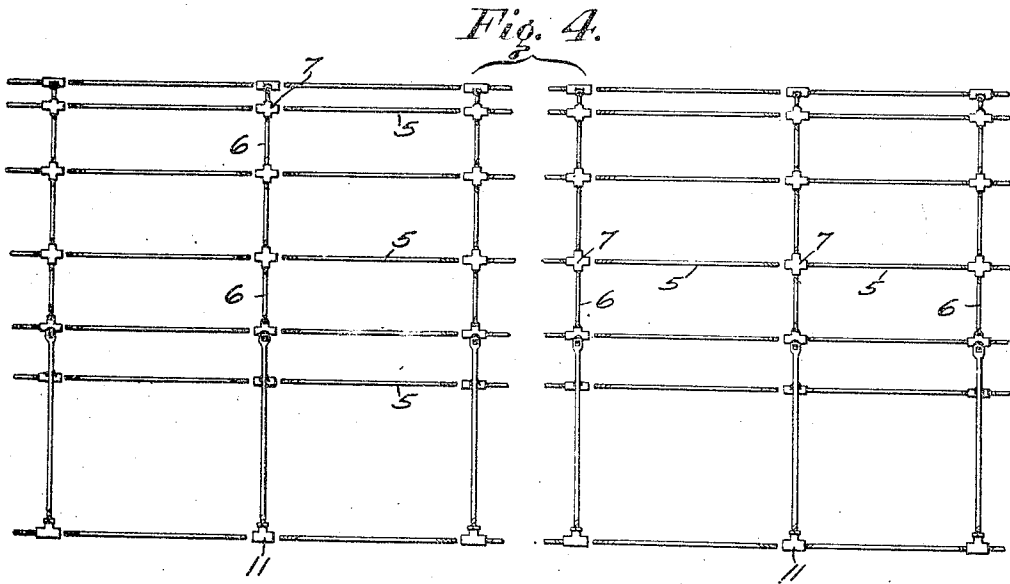
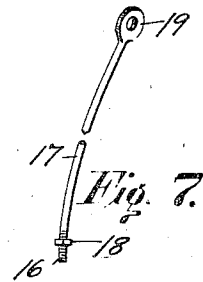
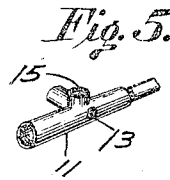
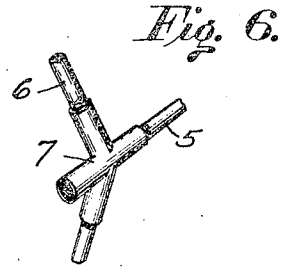
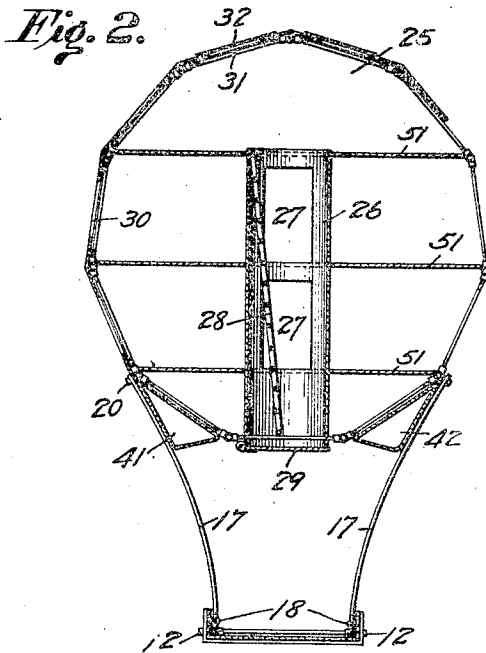
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AIRSHIP.
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2 SHEETS-SHEET 2.



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AIRSHIP.

1,057,831.

Specification of Letters Patent.

Patented Apr. 1, 1913.

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To all whom it may concern:

Be it known that I, MAX ALFRED HERBERT, subject of the German Emperor, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Airships, of which the following is a specification.

My invention relates to balloons and particularly to that class of balloons known as the "rigid" balloon. Such balloons comprise a rigid frame, covered with canvas, or any other suitable fabric and composed of a number of compartments, adapted to hold the gas-bags, which are inflated, so that the balloon will float in the air. From the frame is suspended the gondola, or car, for the passengers and the crew. The car is also used to carry the motors for driving the propellers, which are arranged on the sides of the balloon. The balloon, or air ship, as such a structure may be justly called, is moreover provided with the necessary steering planes, arranged on both sides, an additional steering plane at the stern, and a rudder.

The object of my invention is, to produce a rigid balloon or air ship, which is composed of a plurality of sections, so constructed that the entire balloon may be easily taken apart and assembled. Thereby not only the transportation of such a balloon is greatly facilitated, but, if desired, the air ship, by this method of construction, can be lengthened or shortened at will and, furthermore, single sections, which may become damaged by reason of a fall or any other cause, can be readily replaced without disturbing the other sections of the air ship.

The sections are made of rods, provided at their ends with right and left-handed screw threads, which rods are connected together by internally threaded fittings. These fittings, of course, are provided with female threads corresponding to the right and left-handed threads at the ends of the rods.

In order that the air-ship, if desired, may be lengthened, the car that is suspended from the rigid frame is likewise composed of sections which are capable of longitudinal relative movement and are arranged in such a way that a middle section is detachably connected to two outer sections. The middle section is held by the frame, from which the car is suspended by hangers or

brackets, which are movably fastened to the frame and the said middle section.

It is obvious that, instead of three sections, the car may be composed of four or more sections, which, of course, would afford greater latitude in the lengthening or shortening of the car.

The propellers for driving the air-ship are secured to shafts, which are mounted in bearings arranged in brackets, which brackets are also removably fastened to the frame, so that the propellers can be easily taken off and replaced.

Another feature of my invention resides in means for affording communication between one of the sections of the rigid frame and the interior of the car, to permit exit therefrom in case of danger. To this end, the frame section referred to, preferably the middle one, is provided with a wide tube, having openings in its walls and adapted to contain a ladder, which can be reached from the car by another ladder, which is kept in the car for emergency purposes. The said frame section is also provided with windows and man-holes, which latter, of course, are normally closed by removable covers, which can be opened from the inside of the section to permit exit therefrom.

A further feature of my invention is represented by two floats, which are removably secured to the frame near its bottom and at each side thereof and which are intended to float the air-ship on the water, should the ship fall into the sea or into a lake.

Other minor features will appear from the following description and the claims annexed thereto. I wish it, however, distinctly understood, that, while describing and illustrating my invention, I do not intend to be limited to the specific means, arrangement and construction of parts, as shown and described, my invention being of such a nature that variations may be made without departing from the spirit and scope of my invention.

In the drawing attached hereto, Figure 1 is a side elevation of an air-ship, some sections being broken away and the envelop being partly or entirely removed from other sections. Fig. 2 is a cross-section along the line 2—2 of Fig. 1; Fig. 3 shows the sections of the car, the figure being a horizontal section along the line 3—3 Fig. 1, viewed in the direction of the arrows. Fig. 4 shows part of the skeleton frame and part of the car sus-

pended therefrom; Figs. 5 and 6 show the internally threaded fittings which are used to connect the rods, of which the sections are made, and Fig. 7 shows one of the hangers for suspending the car from the frame.

The air-ship shown in Fig. 1, comprises a rigid frame A, formed of single sections. 1, 2 are the cigar-shaped fore and aft sections, which are composed of curved rods converging at one end, where they are held together by caps 3, 4. With these end sections are connected the intermediate sections, seven of which are shown in the drawing, four sections being partly broken away. Each of these intermediate sections is made up of a number of longitudinal and transverse rods 5, 6. The ends of all these rods are provided with right and left handed threads, as is clearly shown in Fig. 4. In order to connect the rods of the various sections with each other and also with the rods of the adjacent sections, internally threaded fittings 7, such as shown in Fig. 6, are used. These fittings are provided with female threads, corresponding to the right and left handed threads at the end of the rods 5 and 6. Fig. 4 shows, how by means of these fittings the various sections can be easily assembled, or taken apart, it being only necessary to turn the rods 5 and 6 either in one or the other direction, to thereby connect them with or disconnect them from the other rods.

The gondola or car, being designated as a whole by B, is in the construction shown composed of three main sections 8, 9, 10. The middle section 10 is again composed of sub-sections, formed by longitudinal and transverse rods, which, at their ends, are provided with right and left handed screw threads in the same manner, as shown in Fig. 4, and are connected with each other by fittings 11 (Fig. 5). These fittings are provided with corresponding female threads in the same way as the fittings 7, used in the construction of the frame of the air-ship.

As may be seen from Fig. 3, the middle section 10 is nested within two outer end sections 8 and 9 and connected thereto by screws 12, which pass through suitable openings in the outer end sections and enter a female screw socket 13 in the fittings 11 (Fig. 5). If it should be desired to lengthen the car, one of the outer end sections, or both, can be moved relative to the middle-section 10. In order to accomplish this, it is merely necessary to withdraw the screws 12, connecting the outer sections to the middle section.

Fig. 3 shows in dotted lines the position of the outer end section 9, after said section has been moved relative to the middle section 10, in order to lengthen the car. After the section 9 has been moved to the position shown by the dotted lines at the right in Fig. 3,

the sections are again connected by the screws 12. In Fig. 3 the floor of the middle section is designated by 14, otherwise only the skeleton frame of the car is shown in the drawing.

In order to suspend the car just described from the frame of the air-ship, the fittings 11, used to connect the sectional rods of the middle section 10 of the car, are provided with female screw sockets 15 (see Fig. 5). Into these sockets are screwed the lower threaded ends 16 of hangers 17, such as shown in Fig. 7. A nut 18 is provided on these hangers to act as a stop to limit the distance to which the lower ends of the hangers are screwed into the sockets 15 of the fittings 11. At their upper ends, the hangers 17 are provided with eyes 19. Screws 20 (Fig. 1), passing through these eyes, are screwed into female screw sockets, which are provided, like the sockets 13 in the fittings 11, in some of the fittings 7. Such a construction permits the parts to be readily assembled when the car is suspended from the frame of the air-ship. The outer end sections 8, 9 of the car are secured to the frame of the air-ship by curved rods 21, 21', which are fastened to the end sections of the car and are secured to collars 22, 22' on one of the curved rods of the end sections 1, 2 of the frame of the air-ship.

By the rod 21' and the rod of the end section 2, to which the rod 21' is connected, there is held the rear steering plane 23. This is the rudder, arranged at the extreme rear end of the frame of the air-ship.

While each of the sections of the air-ship is intended to hold a gas-bag, which are inflated for the purpose of floating the structure, the middle section 25 is provided with means to afford communication between the frame of the air-ship and the interior of the car. To this end, there is provided in the middle section a wide tube 26, which has openings 27 in its walls. The lower end of said tube projects beyond the bottom of section 25, as shown in Fig. 2. Within the tube, there is arranged a ladder 28 and the open lower end of the tube 26 is normally closed by a cover 29 in such a way that the cover can be easily opened from the interior of the car. When the cover 29 is opened, the ladder 28 in the tube 26 can be easily reached from the interior of the car by means of another ladder, which is kept in the car for emergency purposes. The section 25 is also provided with windows and man-holes 31. The latter are normally closed by man-hole covers 32, which can be opened from the inside of the section 25, so that an exit from the section 25 can be made through said man holes 31.

It remains now to be described, how the propellers for driving the air ship are secured to the frame thereof. The propellers

33 are secured to the ends of shafts 34, which are rotatably journaled in bearings, provided in brackets 35. These brackets, which are of triangular shape, are provided at their ends with eyes in a similar way, as the hangers 17, whereby the car is suspended from the air-ship and the brackets 35 are also fastened to the fittings 7 by means of screws 36, passing through the eyes referred to and entering female screw sockets in the fittings 7. There is a pair of brackets for each propeller shaft, only one bracket of each pair, however, being shown in the drawing. Each propeller shaft is provided with a rope pulley 37, which is driven by means of a rope 38 from the shaft of a motor 39 carried by the car. Two motors are shown in Fig. 1. On account of the construction just described, the propellers can be easily removed from the frame of the air-ship, and replaced.

In the front or in the rear of each propeller there are provided two additional steering planes 40 40' respectively, which can be given different positions to thereby alter the trim of the air-ship. The means for altering the position of these steering planes are not shown, as they do not form any part of my invention.

In order to keep the air-ship afloat on water, should it fall into the sea or into a lake, there are provided near the bottom of the air-ship two floats 41 and 42, one float on each side (see Fig. 2). These floats are triangular in cross-section, as shown in Fig. 2 and are covered with a heavy fabric, which is treated in a special way, so that it will not absorb water.

The entire frame of the balloon is provided with an envelop, as is customary in balloons of this type, which envelop may be of canvas or any other suitable fabric.

The car B is, of course, provided with the usual car equipment, both for the passengers and the crew.

50 are rods connecting the brackets 35, in which the propeller shaft 34 is journaled, and 51 are floors provided in the middle section 25 of the air ship frame.

I claim:

1. An airship comprising a rigid frame, composed of separate detachable sections, means for rigidly connecting said sections, and a car composed of telescopic sections nested within one another and capable of relative longitudinal movement.

2. An airship comprising a rigid frame, composed of separate detachable sections, means for rigidly connecting the same, a car composed of telescopic sections nested within each other and capable of relative longitudinal movement and detachable means for suspending said car from said sections.

3. An airship comprising a rigid frame composed of sections, detachable means for rigidly connecting the said sections, a car, hangers detachably connected to said sections and said car for suspending the same, the said car being composed of separate telescopic sections nested within one another and capable of longitudinal relative movement.

4. An airship comprising a rigid frame built up of adjacent sections, each section being composed of exchangeable rods provided at their ends with right and left handed screw threads and internally threaded fittings rigidly connecting said rods and the said sections, a car composed of telescopic sections nested within each other and capable of longitudinal relative movement, and detachable hangers for suspending said car from the sections of the frame.

In testimony whereof I affix my signature in presence of two witnesses.

MAX ALFRED HERBERT.

Witnesses:

ANNA HOYER,
LOUISE H. STAADEN.