

No. 670,807.

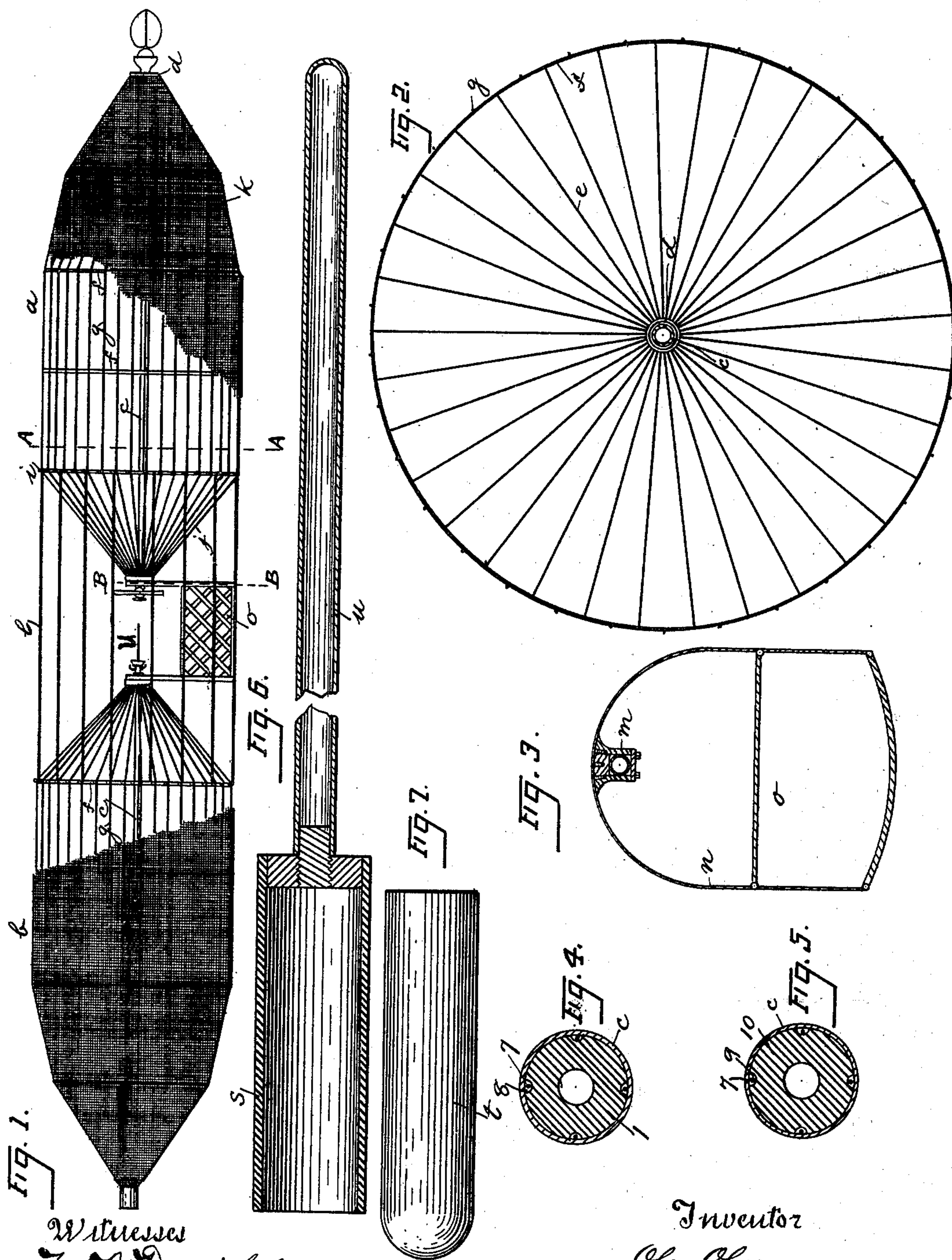
Patented Mar. 26, 1901.

O. OLSEN.
AIR SHIP.

(Application filed Mar. 23, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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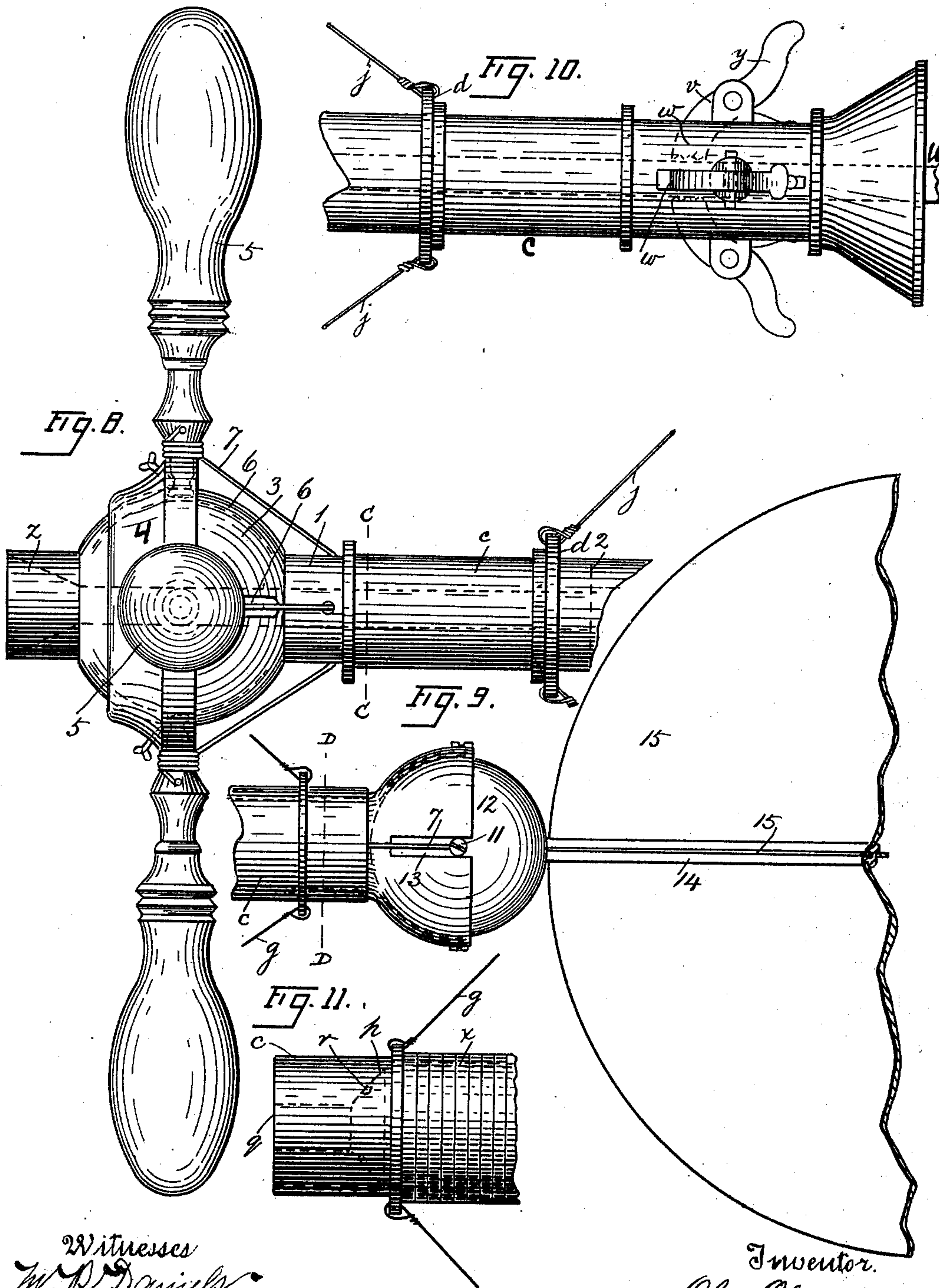
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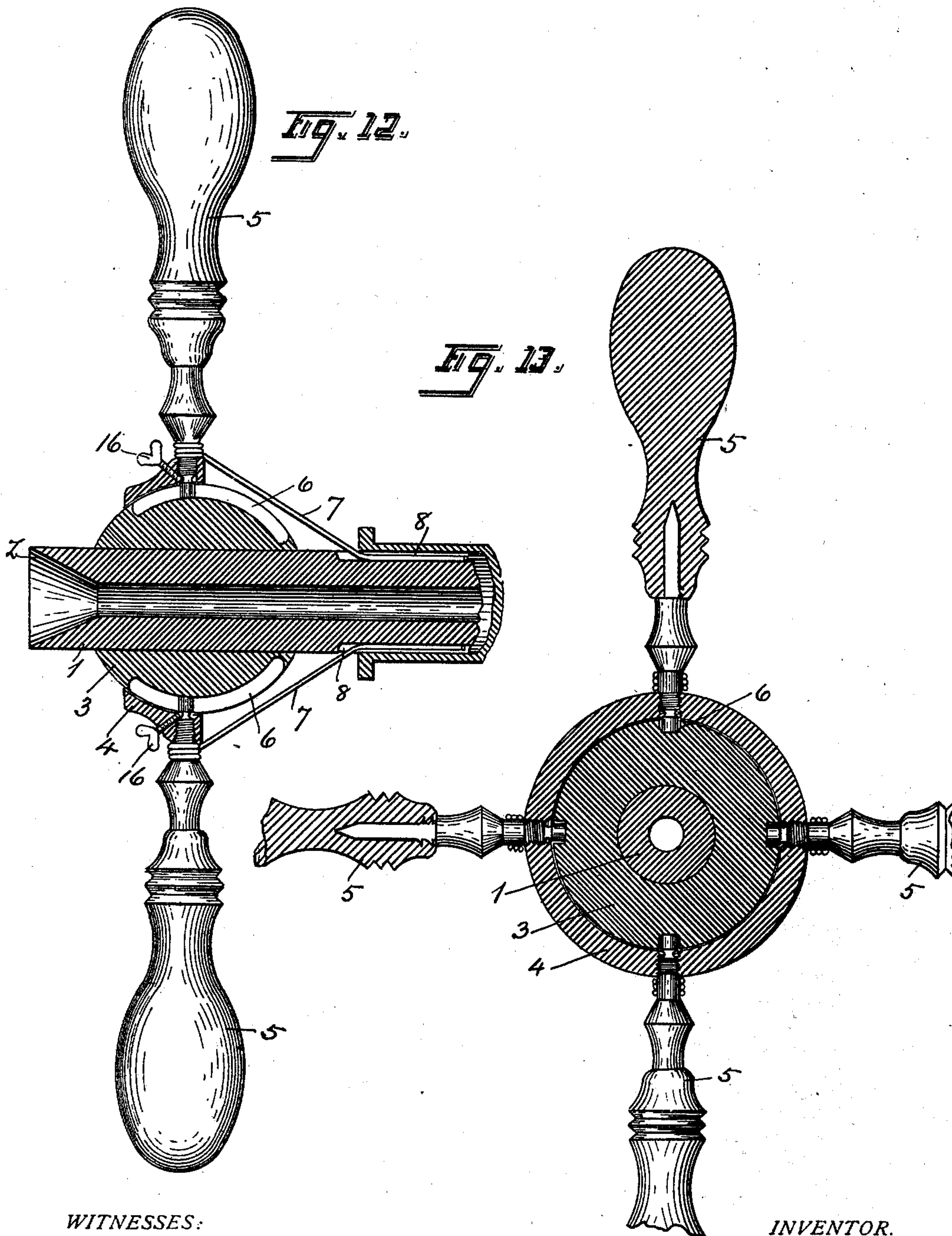
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WITNESSES:

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OLE OLSEN, OF OAKLAND, CALIFORNIA.

AIR-SHIP.

SPECIFICATION forming part of Letters Patent No. 670,807, dated March 26, 1901.

Application filed March 23, 1900. Serial No. 9,847. (No model.)

To all whom it may concern:

Be it known that I, OLE OLSEN, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Air-Ships, of which the following is a specification.

My invention relates to improvements in air-ships, the object of my invention being to provide an apparatus of this character which may be readily operated and steered and which shall be light in weight and cheap and simple in construction.

My invention therefore resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of the air-ship, certain parts being broken away. Fig. 2 is a transverse section on the line A A of Fig. 1, on a larger scale. Fig. 3 is a section on the line B B of Fig. 1. Fig. 4 is a section on the line C C of Fig. 8. Fig. 5 is a section on the line D D of Fig. 9. Fig. 6 is a longitudinal section of the cartridge holder and stem broken. Fig. 7 is a side elevation of the cartridge. Fig. 8 is a side elevation of the power end of the steering-machine. Fig. 9 is a similar view of the working end thereof. Fig. 10 is a similar view of the front end of the rear tube. Fig. 11 is a similar view of the rear end. Fig. 12 is a broken central vertical longitudinal section through the steering apparatus, and Fig. 13 is a broken central vertical transverse section therethrough.

Referring to the drawings, it will be seen that my improved air-ship comprises two main sections *a b*, of which *a* is the front section and *b* the rear section, arranged in line with each other and similar in appearance and general construction. Each section comprises a central steel tube *c*, on which are secured at intervals flanged collars *d*. To the flanges of said collars are secured the inner ends of thin steel spokes *e*, said spokes radiating therefrom and their outer ends being secured in rings *f*. Said rings vary somewhat in diameter, those at the ends of the ship being the smallest.

A number of strong wires *g*, like piano-

wires, are secured at one end to the outer terminal collar *d* of the section and are then led over the rings *f*, being finally secured to the innermost of the rings *f* and tightened by means of keys *i*, like those used for tightening piano-wires. Similar wires *j*, but shorter, are secured to the inner terminal collar *d* of the section and to said keys *i*. Over the framework of each section thus formed is secured a gas-proof covering *k*, forming a chamber. The two chambers of the two sections will be filled with a light gas, or a more or less perfect vacuum may be created in the chambers to provide buoyancy, the framework being sufficiently strong to resist considerable external pressure. The two sections are secured together by a number of ties or stays *l*, which extend from the inner ring *f* of one section of the inner ring of the other section and are riveted to said ring.

Upon the ends of the tubes *c*, beyond the inner terminal collars *d*, are suspended by yokes *m* the hangers *n* of the central car *o*, in which the aerial navigator and passengers take their position.

The air-ship is propelled by the following means: The rear end of the tube *c* of the rear section *b* tapers, as shown at *p*, to a contracted orifice *q*. On the conical or tapering surface are formed a suitable number of pins or protuberances *r*. A cartridge-holder *s*, containing a cartridge *t* of any suitable explosive material, is pushed rearwardly along the tube by means of a long stem *u* until the end of the cartridge projecting through the open end of the cartridge-holder impinges upon the pins *r*, and the cartridge is thereby exploded. Backward movement of the cartridge-holder and stem is opposed by means of spring-actuated clamps *v*, the jaws *w* of which pass through openings in the tube and are automatically engaged by the stem at the beginning of any rearward movement and are forced inwardly to effectually clamp the stem. Thus the gases resulting from the explosion of the cartridge in escaping through the orifice *q* exert their full force in propelling the ship forward. The portion of the steel tube *c* in which the explosion takes place is suitably reinforced by steel bands, as shown at *x*.

The clamps *v* may be released by the navi-

gator to recharge the barrels *s* by means of handles *y*, and after releasing the clamps the operator will move the stem forward, causing it to enter the flaring orifice *z* at the inner end of the tube *c* in the front section of the ship and pass along said tube until the barrel *s* comes sufficiently forward to enable a new cartridge to be inserted thereinto. The pivoted handles *y* are so conformed that they are held in position by the springs either when turned down to release the stem or when turned up to clamp the same.

The arrangement for steering the air-ship is as follows: In the rear end of the tube *c* of the front section is inserted a plug 1, extending into said tube *c* to the point 2, as shown in dotted lines in Fig. 8. Said plug is centrally bored to permit the passage of the stem *u*, said bore having the flaring orifice *z*, heretofore mentioned, to permit the readier centering of the stem *u* therein. Said plug has a globular seat 3 for a steering-collar 4, concaved to fit on said seat. In said collar 4 are revolvably inserted four handles 5, extending in two lines at right angles to each other. In the globular seat 3 are formed four grooves 6, extending fore and aft of the ship, and in each groove moves the end of one of the handles 5, by which means the collar is guided in its movement on the seat. To each handle 5 is secured a wire 7, extending therefrom forwardly through the end of the tube *c* in a groove 8, cut in the plug 1, and thence to the front end of said tube *c*, where it passes along a groove 9, cut in a plug 10, inserted in the front end of the tube *c* and is secured to a stud 11, fastened in a ball 12, socketed in the globular end of said plug, said globular end being suitably cut out, as shown at 13, to permit the studs 11 to move therein. To said ball is secured a post 14, from which extend four vanes 15 in perpendicular planes, thus forming a universal rudder. It will readily be seen that any movement imparted to any diametrically opposite pair of handles 5 will produce a corresponding movement of the rudder, and that the ship may thus be guided either up or down or to the right or left, as may be desired. The wires 7 are tightened around the handles 5 by revolving said handles in their sockets, and said handles are retained in position by means of set-screws 16.

I claim—

1. In an air-ship, the combination of a longitudinal tube, collars mounted thereon, wire spokes extending radially from said collars, rings to which the outer ends of the spokes are secured, wires extending longitudinally over said rings, means for tightening said wires over said rings, and a gas-proof covering over said wires, substantially as described.

2. In an air-ship, the combination of a longitudinal tube, collars mounted thereon, wire spokes extending radially from said collars, and rings to which the outer ends of the spokes are secured, wires extending longitudinally over said rings, said wires being se-

cured at one end to a collar on the tube and at the other end to keys in one of said rings, said keys, and a gas-proof covering over said wires, substantially as described.

3. An air-ship comprising two gas-tight sections separated by a space for the passengers, each section being conoidal in shape, the axes of the conoids being in line and their vertices at the ends of the ship, ties connecting the bases of the conoids, a steering apparatus at the front end in the axial line of the front section, a rearwardly-opening tube in the axial line of the rear section, said tube extending forward to the space for the passengers, means for conveying an explosive cartridge along said tube to its rear end from said space, and means for exploding said cartridge in said rear end, substantially as described.

4. An air-ship comprising two gas-tight sections in line with each other, separated by a space for the passengers, said sections being connected by ties, a tube extending centrally of the rear section in the direction of alignment of the two sections from the rear end of the rear section to the space between the sections, means for conveying an explosive cartridge from said space along said tube to the rear end thereof, means for exploding said cartridge when in position in the rear end of said tube, and means for supporting the cartridge against forward movement during explosion, substantially as described.

5. An air-ship comprising two gas-tight sections separated by a space for the passengers, each section being conoidal in shape, their axes being in line and their vertices at the ends of the ship, a tube along the axis of each section, ties connecting the bases of the conoids, a steering apparatus at the front end of the ship, connections therefrom to the space for the passengers inclosed within the tube of the front section and means for conveying an explosive cartridge in the tube of the rear section to the rear end thereof, said means being inclosed within said tube, substantially as described.

6. An air-ship comprising two gas-tight sections separated by a space for the passengers, each section being conoidal in shape, the axes of the conoids being in line and their vertices at the ends of the ship, ties connecting the bases of the conoids, a tube along the axis of the rear section, a cartridge-holder in said tube, and a stem for moving said cartridge-holder along said tube, substantially as described.

7. An air-ship provided with a tube, a cartridge-holder adapted to be inserted in said tube, means for withdrawing said cartridge-holder to insert an explosive cartridge thereinto, means whereby the cartridge is automatically exploded on replacing the cartridge-holder in position, and means for preventing movement of the cartridge-holder when the cartridge is exploded, substantially as described.

8. In an air-ship, the combination of a tube,

a cartridge-holder therein having a stem, and a clamp arranged to automatically clamp the stem when the latter is moved in one direction but permitting free movement in the opposite direction, substantially as described.

9. An air-ship provided with a tube, a cartridge-holder in said tube having a stem, a clamp automatically clamping said stem against movement in one direction and a double-acting spring holding the clamp in a position either operative or inoperative, substantially as described.

10. An air-ship provided with a tube, a cartridge-holder in said tube having a stem, a clamp automatically clamping said stem in one direction of its movement, and pins or protuberances at the end of the tube for automatically exploding a cartridge moving along the tube in said holder to said end, substantially as described.

11. In an air-ship, the combination of a tube, a suitable framework thereon, a gas-tight covering over said framework, a four-vane rudder pivotally mounted at one end of the tube, a four-handled steering-collar pivotally mounted at the other end, and wires connecting the collar and rudder, substantially as described.

12. In an air-ship, the combination of a tube, a suitable framework thereon, a gas-tight covering over said framework, a grooved plug at

each end of the tube, a four-vane rudder pivotally mounted in one of the plugs, a steering-collar pivotally mounted in the plug at the other end, and wires, in said grooves in both plugs, connecting the collar and rudder, substantially as described.

13. In an air-ship, the combination with a four-vane rudder, of the means for operating the rudder, comprising a globular seat, a collar thereon, handles revolvably mounted in sockets in said collar, and wires extending to the rudder and wound around said handles to tighten the wires, substantially as described.

14. In an air-ship, the combination with the four-vane rudder, of a ball in which said rudder is secured, a plug having a globular socket in which said ball works, said socket being cut away for the passage of wires thereover, and said plug having grooves for the wires, studs in said ball, wires secured to said studs and extending to a distant part of the ship, and suitable means, at said distant point, for operating said wires, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

OLE OLSEN.

Witnesses:

D. E. BROWN,
FRANCIS M. WRIGHT.