

1,032,976.

J. WULFF.
FLYING MACHINE.
APPLICATION FILED JULY 29, 1911.

Patented July 16, 1912.

2 SHEETS—SHEET 1.

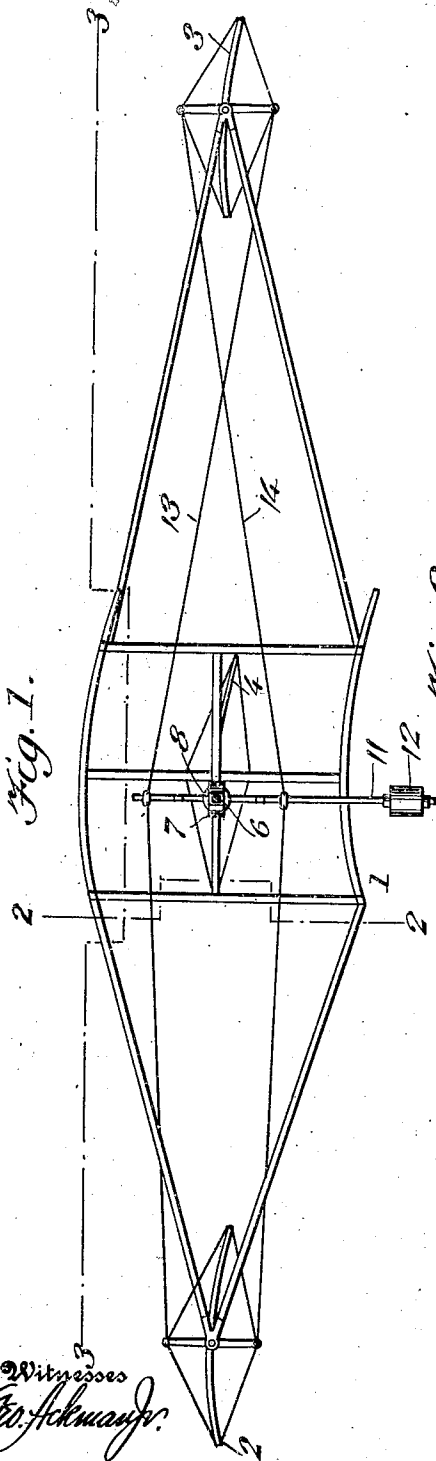
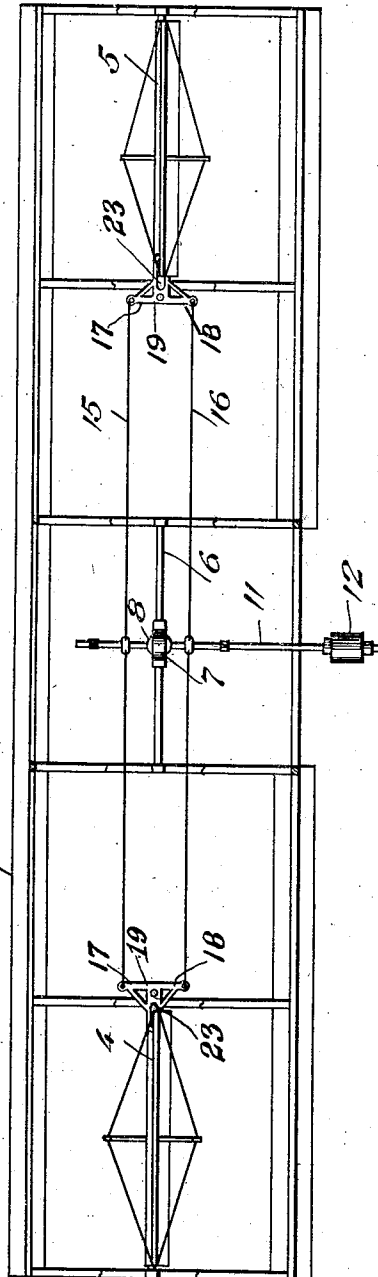


Fig. 2.



Witnesses
Geo. Ackmann

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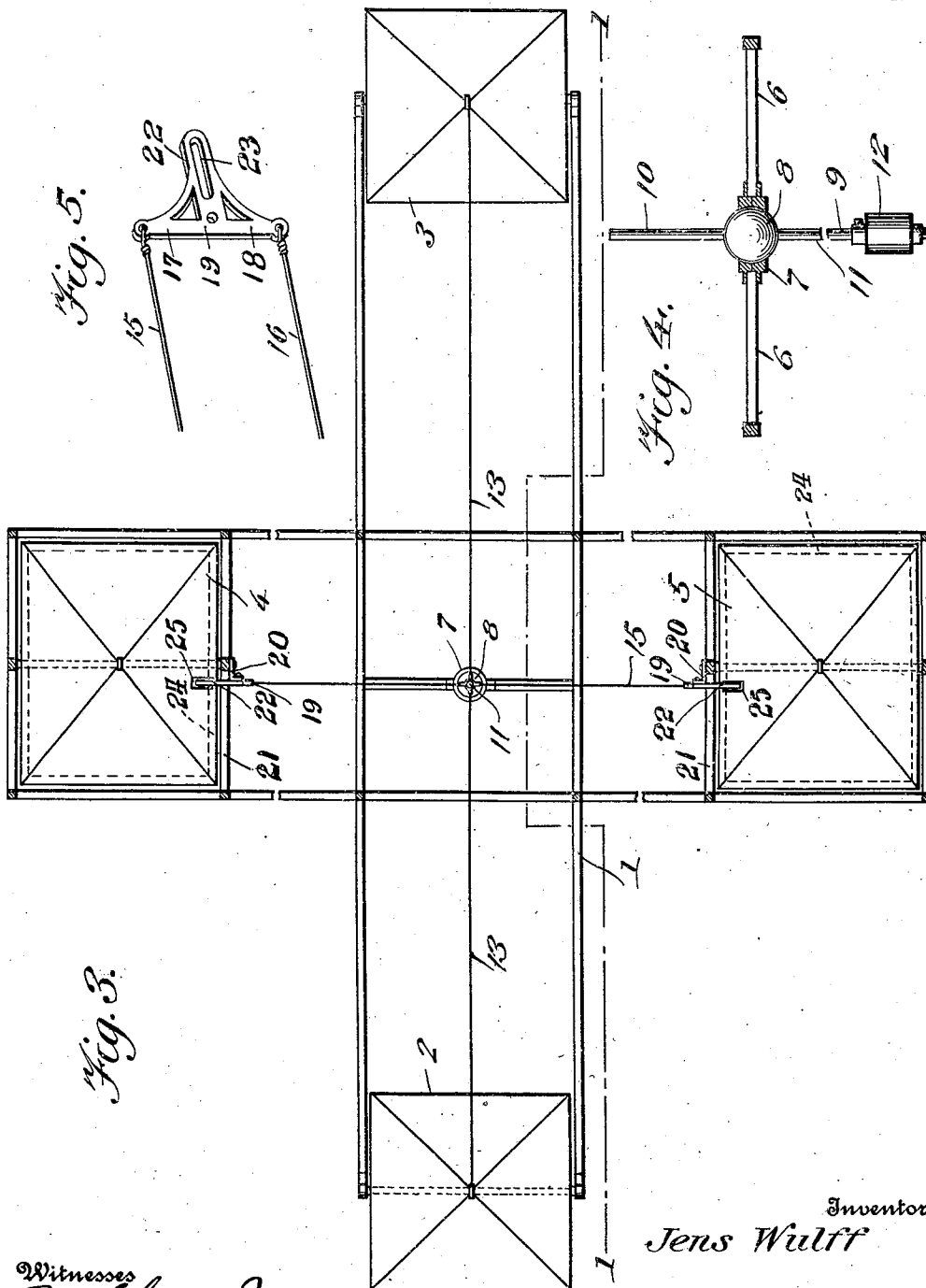
Attorney

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UNITED STATES PATENT OFFICE.

JENS WULFF, OF ERWIN, SOUTH DAKOTA.

FLYING-MACHINE.

1,032,976.

Specification of Letters Patent.

Patented July 16, 1912.

Application filed July 29, 1911. Serial No. 641,217.

To all whom it may concern:

Be it known that I, JENS WULFF, a citizen of the United States, residing at Erwin, in the county of Kingsbury and State of South Dakota, have invented new and useful Improvements in Flying-Machines, of which the following is a specification.

This invention relates to flying machines, and particularly to means for controlling the longitudinal and lateral balance thereof, the object of the invention being to provide simple and effective controlling mechanism for automatically maintaining the longitudinal and lateral equilibrium.

The invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a vertical longitudinal section through a flying machine embodying my invention. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a top plan view of the balancing pendulum and its support. Fig. 4 is a sectional elevation of the same. Fig. 5 is a detail view of one of the T-shaped levers for operating the lateral balancing planes.

Referring to the drawings, 1 designates a flying machine of any of the types in common use, which machine is provided with front and rear horizontal rudders 2 and 3 for controlling the longitudinal balance thereof, and balancing planes or equivalent devices 4 and 5 for controlling the lateral equilibrium thereof.

Arranged at a suitable point upon the machine is a bracket or supporting member 6 provided with a band or partially spherical socket 7 receiving a ball or head 8 upon a gravity controlled balancing element or pendulum 9 having an upwardly extending arm 10 and a depending arm 11, the latter carrying a weight 12 for maintaining said pendulum in a perpendicular position irrespective of the tilting motions of the machine.

The head 8 is loosely retained within the band or collar 7, so as to have universal motion, so that upon the tilting of the vessel on either of its axes a relative balancing

motion between the machine and the pendulum will be established for controlling the balancing planes or devices.

As shown, connections in the form of wires or cables 13 and 14 lead from the upper and lower arms of the pendulum to the front and rear balancing planes or rudders 2 and 3, while similar connections 15 and 16 lead from the upper and lower arms of the pendulum to the balancing planes or devices 4 and 5, the construction and arrangement being such that when the machine tilts in a fore and aft direction the rudders 2 and 3 will be tilted in opposite directions to restore the longitudinal balance, while, when the machine tilts laterally in either direction, the balancing planes or devices 4 and 5 will be properly adjusted in opposite directions to restore the lateral balance. The connections 15 and 16 are attached at their outer ends to the upwardly and downwardly extending arms 17 and 18 of T-shaped levers 19, fulcrumed at the points of intersections of their arms to brackets 20 on frame pieces 21 for swinging movement in a vertical plane. The outwardly projecting horizontal arms 22 of said levers are provided with longitudinal slots 23 which receive and slidably and pivotally engage the inner end bar 24 of the frames of the balancing planes 4 and 5, in advance of the pivotal points of the latter, said planes being slotted, as at 25, to permit free movement of said arms 22. Hence when the connections 15 and 16 are operated one of the levers 19 will be swung downward and the other upward to correspondingly adjust said balancing planes 4 and 5, as will be readily understood. It will thus be seen that the invention provides simple and effective means for maintaining both the longitudinal and lateral equilibrium of the machine, and it will be understood that the pendulum may also be employed as a lever for manual operation whereby the sets of balancing planes or devices are also placed under the complete control of the aviator.

Having thus described the invention, what I claim as new is:

A flying machine embodying a frame, pivotally mounted balancing planes formed

with slots and having inner end bars, T-shaped levers pivotally mounted upon the frame adjacent to said balancing planes and provided with vertical arms and horizontal arms, the horizontal arms being slotted and slidably and pivotally engaging the said inner end bars of the balancing planes and freely movable through the slots therein, connections between the vertical arms of the

levers, and a controlling pendulum coupled to said connections.

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

JENS WULFF.

Witnesses:

A. H. COTHER,
CHAS. A. ALSETH.