

F. BRACKETT.

AIR CRAFT.

APPLICATION FILED NOV. 17, 1909.

981,367.

Patented Jan. 10, 1911.

2 SHEETS—SHEET 1.

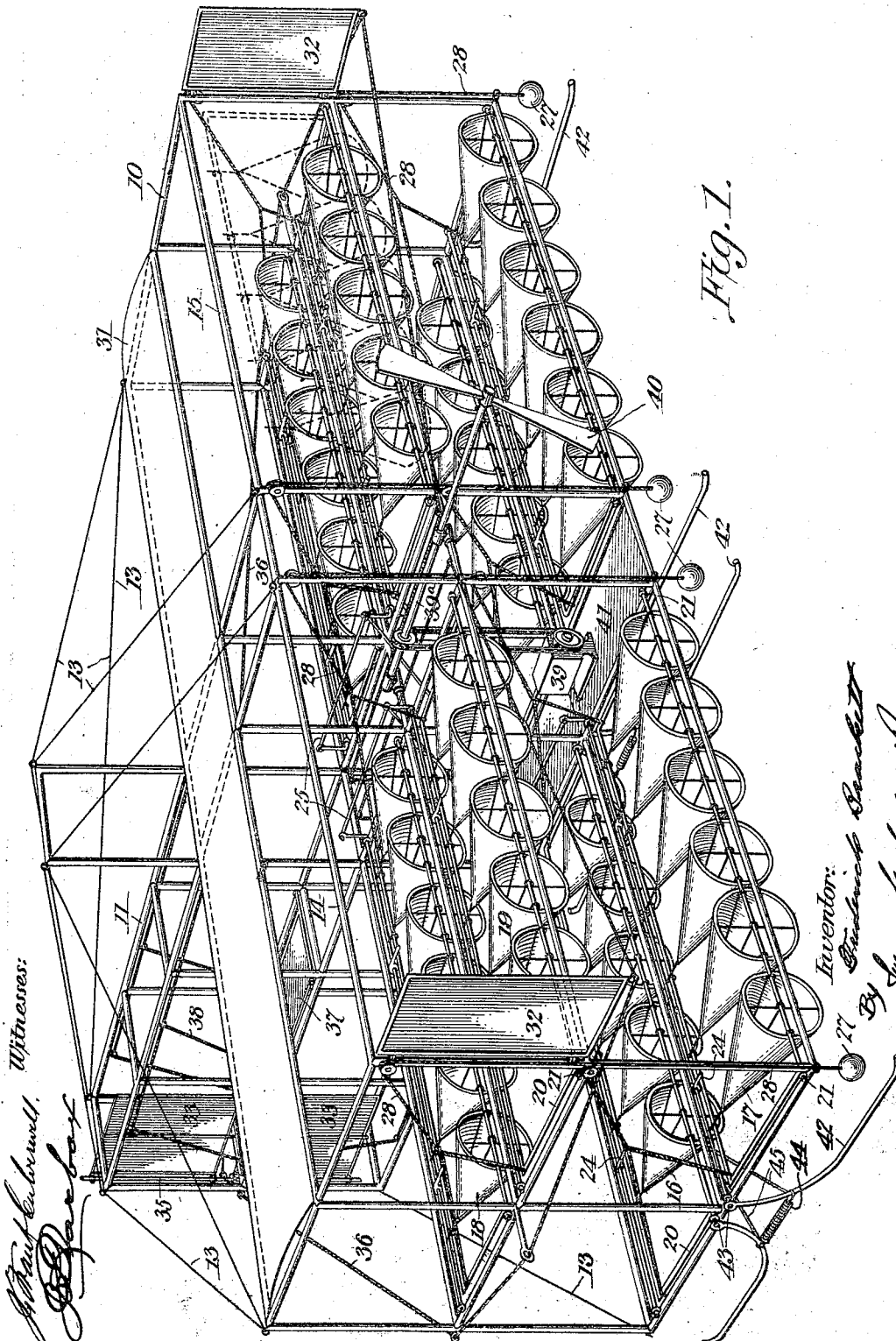


Fig. 1.

Witnesses:

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981,367.

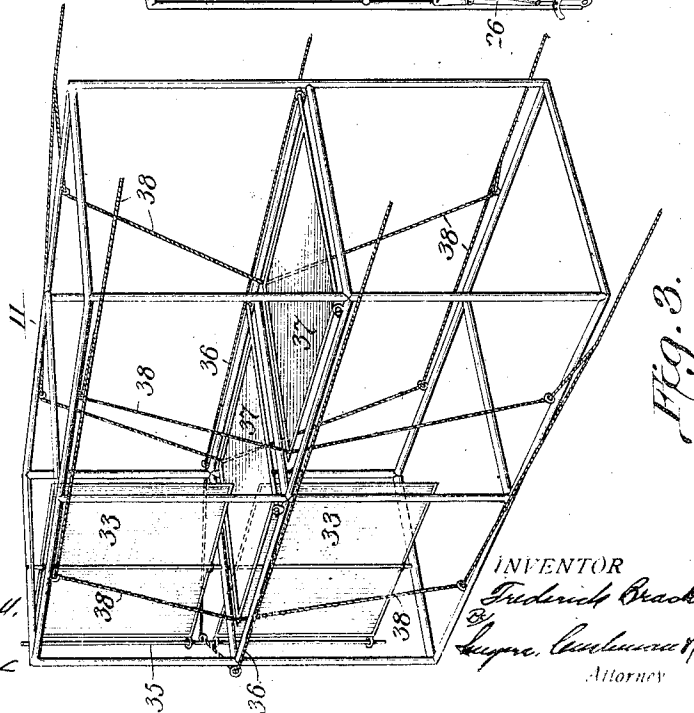
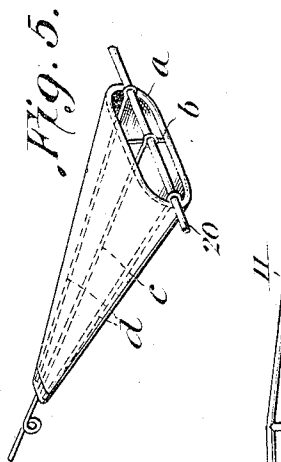
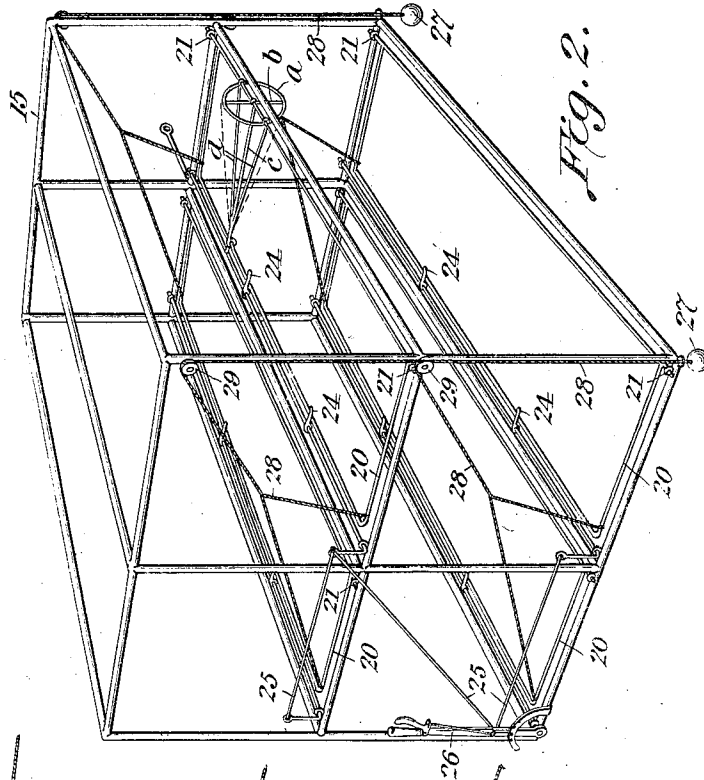
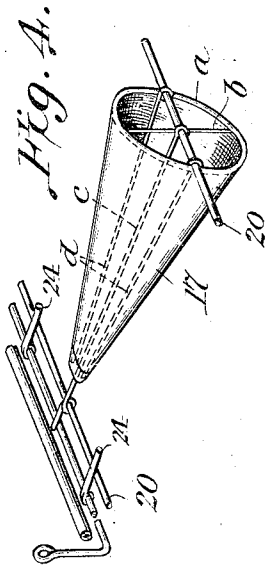
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2 SHEETS—SHEET 2.



WITNESSES

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AIR-CRAFT.

981,367.

Specification of Letters Patent.

Patented Jan. 10, 1911.

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To all whom it may concern:

Be it known that I, FREDERICK BRACKETT, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Air-Craft, of which the following is a specification.

My invention relates to that type of air craft commonly known as heavier than air machines, and that type of heavier than air machines commonly known as aeroplanes.

In machines of the type designated great difficulty is experienced on account of several disturbing factors, the elimination of which has so far proven impracticable in heavier than air machines. One of these is the difficulty of making a safe and easy landing without damage to either the aviator or the air craft at all times, and particularly when the propelling power fails or has to be cut off during flight. Descent upon land frequently brings about disastrous results through the heavy impact occasioned by the too rapid ill-chosen or ill-timed landing or falling upon the ground, while similar landing or falling into water also brings about disastrous results, if not by hurt to the machine and aviator, by drowning of the aviator and by wetting the machine. Whether the landing takes place on land or in water there is danger both for the aviator and to the machine. Another disturbing factor in connection with the operation of these machines is their unsteadiness in even gentle breezes, it having proven so far impracticable to fly in the existing machines when the wind exceeds a certain moderate velocity or when it is gusty to any small extent.

The objects of my invention are to obviate the above named difficulties. These objects I accomplish by making use of an old and well known principle. This principle is that by which a hollow cone when thrown point on into the air flies truly and lands easily, being comparatively free from disturbances of minor magnitude in the atmosphere.

The air craft of my invention comprises a frame carrying supporting surfaces made up of a plurality of hollow cones arranged in certain order, and suitable propelling and guiding means mounted in connection therewith. These cones are arranged so that while they normally serve as supporting surfaces they may be moved at the will of the aviator or automatically to a position in which they are open end or base downward

as the machine descends, thus acting as damping devices or parachutes to ease the descent of the machine. The descent is thus made gradually and if the machine alights or falls on water air will be pocketed in the cones, and the air craft will be floated thereby.

A particular embodiment of my invention is set forth in the paragraphs following which are to be read in connection with the accompanying drawings in which,—

Figure 1 is a general perspective view of the air craft of my invention showing in full lines the cones in normal position and in dotted lines, one row of the cones in the position which they occupy when the machine is descending. Fig. 2 is an enlarged view of a portion of the frame-work of the air craft showing particularly the mounting of the cones. Fig. 3 is the front portion of the middle section of the frame. Fig. 4 is a detail showing an enlarged view of one of the cones and its construction. Fig. 5 is a modified form of cone.

Referring to Fig. 1 of these drawings, 10 is the main frame of the machine which is provided with a front extension 11 of substantially smaller dimensions. The frame is made of suitable light material, and is connected together, guyed and braced by suitably placed cords or wires 13. The frame 10 is built in three sections 14, 14^a, and 15, two of which 14, and 15, are essentially similar, one of the sections 14 and 15 being shown in Fig. 2, and part of section 14^a in Fig. 3. The section 14^a is narrow and projects in front of sections 14 and 15 to form extension 11. These sections may be built separately and afterward bound together whereby they may be easily transported, or else they may be built connectedly in the first instance. At the bottom of this frame are supported two parallel rows of cones 16 and 17, the cones all pointing toward the front of the machine, the points of the cones in the hindmost row being located midway between the ones of the foremost row, and their axes being parallel and lying in the same plane. Midway between the top and bottom of the frame is a second group of cones 18 and 19 arranged similarly to the first group of cones and in a plane parallel to the plane occupied by the first group. These cones are made of light silk, canvas or other material found suitable stretched on a frame-work comprising a hook *a*, form-

ing the base of the cone, two diametrical
bracing strips *b*, a strip *c* forming the axis
of the cone, and two bracing strips *d* form-
ing elements of the cone. The cones of
each row are mounted transversely of a rec-
tangular hinged frame 20, there being two
of these frames, one on each side of the cen-
ter of the craft for each row, the frames
being hinged at 21 to the frame 10 of the
craft. The base of each cone is hinged at
points 22 to the rear or hinged sides of the
frames 20, the hinged sides thus serving as
pivotal bars for the individual cone in ad-
dition to being socketed in the main frame
10 to serve as the hinge element for the
frame 20. The points of the cones are se-
cured to the front sides of the frames 20.
These frames are normally held in the hori-
zontal planes as shown by latches 24, all the
latches being connected together by rods or
wires 25 and operable by a common hand
lever 26, so that all the frames 20 may be
released at the same time. The frames are
biased to a vertical position by weights 27
on the ends of cords 28 which pass over pul-
leys 29 and are attached to the front ends
of the frames. The weights 27 tend to draw
the frames to vertical positions at all times.
On the top of the main frame 10 is a plane
supporting surface 31 which is slightly
curved in the well known manner and occu-
pies approximately a plane parallel to the
planes occupied by the cones just described.

Three vertical rudders are provided, two,
32, on the rear of the craft, one on each side
of the frame 10 outside of the rows of cones,
and one, 33, on the front extension of the
machine at the extreme forward end, one
mounted vertically above the other. All of
these rudders are connected together in a
suitable manner, as by rods 35 and cords 36,
so that they may be operated synchronously.
It will be observed that the rudders are
placed in the most advantageous positions
where they can be freely acted upon by the
air while the craft is moving. Horizontal
rudders or elevating planes 37 are provided
in the front extension 11, these being two
in number, mounted in the central part of
the extension 11 in a horizontal plane, and
one behind the other, the horizontal plane
in which they are mounted passing midway
between the two vertical rudders 33 and the
front rudder being limited in its movements
by the front vertical rudder. Too great
movement of these elevating rudders is thus
prevented. Operating cords 38 connect these
rudders so that they, like the vertical rud-
ders, may be synchronously operated. It
will be observed that these rudders 37 are
also in a most advantageous position being
midway between the vertical rudders, so that
there is no interference between them while
either or both are acting.

A propelling motor is located at 39 and

drives by shaft 39^a the propeller 40 of the
machine, both the motor and the propeller
being located centrally.

41 is the aviator's platform on which he
sits or stands and operates the control levers
which are located adjacent to it.

Secured to the bottom of the frame 10 are
landing skids 42. These skids are made in
two parts pivoted at 43 and connected to-
gether by a spring 44 which biases them to-
gether. Braces 45 hinged to the frame and
to the skids serve to hold the skids in posi-
tion and at the same time permit relative
movement between the parts of the skids
and between the skids and the frame.

As thus embodied, the air craft of my in-
vention is operated as follows: Normally all
the cones are in the full line horizontal posi-
tion shown, in which position they serve as
supporting surfaces in connection with the
plane supporting surface 31. They present
relatively small resistance to the movement
of the machine owing to the fact that they
are pointed, while when flying with the wind
the cones actually aid flight when the veloc-
ity of the ship is relatively less than that of
the wind, the wind pocketing in the open
ends of the cones and driving the craft for-
ward at an increased rate of speed. In ad-
dition to acting as supporting surfaces the
cones are a means of steadying the air craft
in its flight, the cones having a marked tend-
ency, when once started in a certain direc-
tion, to continue traveling in that direction.
Moreover, owing to the fact that they have
curved exterior surfaces slight eddies or
gusts do not disturb the equilibrium of the
craft to the same extent as would be the case
if plane surfaces were used instead. When
it is desired to descend with ease, because
of disablement of some part of the machine,
or because it is deemed most advisable for
other reason to descend in a substantially
vertical direction, the frames 20 carrying the
cones are released by operating the latch le-
ver 26. Immediately the cones are moved
to a vertical position by the weights 28. In
this position air is pocketed within them and
they act as damping devices or parachutes,
which ease the descent of the craft and at
the same time preserve its equilibrium. De-
pending upon the rapidity of descent desired
one or more frames 20 may be released, sepa-
rate hand levers being simply provided for
that purpose. In case the craft lands on
water the pocketed air within the cones
floats the craft. Thus I have accomplished
the objects of my invention, having secured
a machine having a marked steadiness in
flight and a machine in which a safe landing
may be made either on land or water. Thus
also I have produced a structural embodi-
ment of my invention which enables it to be
utilized to good advantage, and by virtue
of the relative arrangement of parts and de-

tail mountings and connection with each other, have secured a most convenient and efficient operation for the air craft.

That my invention may be embodied in other forms is quite apparent. I particularly desire to have it understood that I do not limit myself to the use of perfect cones. In fact I prefer in some instances to use flattened or distorted cones, such as shown in Fig. 4, and the essence of my invention lies not particularly in the fact that I use perfect cones, but in the fact that I use pointed air pocketing elements, the base or rear end of each element being open and the remaining body of the element being air tight so that pocketing may take place, and so that air caught in the pocket will not leak out. Accordingly in the claims annexed hereto I desire to have it understood that wherever the word "cones" is used, that word is intended to cover all air pocketing elements which will serve the same purpose. Likewise, I desire to cover all modifications of the general structure of the particular embodiment described which do not depart from the generic spirit of my invention.

What I claim is,—

1. An air craft comprising a supporting surface made up wholly of a plurality of conical pockets open at the rear end, means connecting them together, and means for propelling them through the air.

2. An air craft comprising a frame, a supporting surface wholly comprising a plurality of cones independent of each other and of other surfaces carried by said frame, and means of propulsion connected with said cones.

3. An air craft comprising a supporting surface made up wholly of a plurality of pointed air pockets permanently open in the rear, means connecting them together, and means of propulsion connected with the said air pockets.

4. An air craft comprising a supporting surface made up wholly of a plurality of air pockets permanently open in the rear, the open ends of the pockets being toward the rear of the craft, means connecting the pockets together, and means of propulsion connected with the pockets.

5. An air craft comprising a frame, a supporting surface composed wholly of a row of parallel supporting cones independent of each other and of other surfaces carried by said frame, and means of propulsion connected with said frame.

6. An air craft comprising a frame, a supporting surface composed wholly of a plurality of parallel rows of cones independent of each other and of other surfaces supported by said frame, and means of propulsion.

7. An air craft comprising a frame, a row of parallel cones supported by said

frame, which cones are hinged at one end and normally lie with their axes in a horizontal plane, means for allowing the cones to shift their position, and means of propulsion.

8. An air craft comprising a main frame, a hinged rectangular sub-frame normally occupying a horizontal plane, a row of parallel cones pointing in the direction of movement of the craft supported by said sub-frame, means normally holding said sub-frame in a horizontal plane, and means for releasing said frame to shift the cones from their horizontal position.

9. An air craft comprising a main frame, a rectangular sub-frame hinged at its rear side and normally occupying a horizontal plane, a row of parallel cones pointing in the direction of movement of the craft supported by said sub-frame, means normally holding said sub-frame in a horizontal plane, and means for releasing said frame to shift the cones from their horizontal position.

10. An air craft comprising a frame, said frame being provided on its rear side with a pivotal bar, a plurality of cones supported on said frame, each cone having one end supported from the said pivotal bar by a hinged connection, means normally holding the cones in a horizontal position, and means for releasing the cones and allowing them to change their position by turning on the pivotal bar.

11. An air craft comprising a frame, a row of parallel cones supported by said frame, said cones being hinged at the base end and pointing frontward, means normally holding the cones in a horizontal position, and means which tends to draw said cones to a vertical position.

12. An air craft comprising a main frame, a row of parallel cones supported on said frame, said cones being hinged at one end and pointing frontward, a latch normally holding said cones in a horizontal position, and means for releasing the latch whereby said cones may assume a vertical position.

13. An air craft comprising a main frame, a row of parallel cones supported on said frame, said cones being hinged at one end and pointing frontward, a latch normally holding said cones in a horizontal position, means for releasing the latch whereby said cones may assume a vertical position, and a weight which tends to draw said cones to a vertical position.

14. An air craft comprising a supporting surface made up wholly of a plurality of air pockets, a plane supporting surface, means connecting the said surfaces together, and means of propulsion.

15. An air craft comprising a frame, a plurality of cones carried by said frame, the axes of said cones lying in the same horizontal plane, an additional plane supporting

surface in a plane parallel to the plane of the axes of the cones, and means of propulsion.

16. An air craft comprising a frame, a plurality of cones carried by said frame, the axes of said cones lying in the same horizontal plane, an additional plane supporting surface parallel to and above the plane of the axes of the cones, and means of propulsion.

17. An air craft comprising a main frame, a hinged sub-frame mounted thereon, a plurality of cones supported by said sub-frame and normally occupying a substantially horizontal position, and means whereby said cones may be shifted to occupy a position at an angle to the horizontal.

18. An air craft comprising a frame, a fixed supporting surface substantially in a horizontal plane, and a movable supporting surface of conical air pockets open at the base and normally occupying a horizontal plane, and means for shifting said movable supporting surface to a position in which it acts as a damping surface to ease the descent of the machine in a vertical direction.

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

FREDERICK BRACKETT.

Witnesses:

ARTHUR L. BRYANT,
A. V. CUSHMAN.