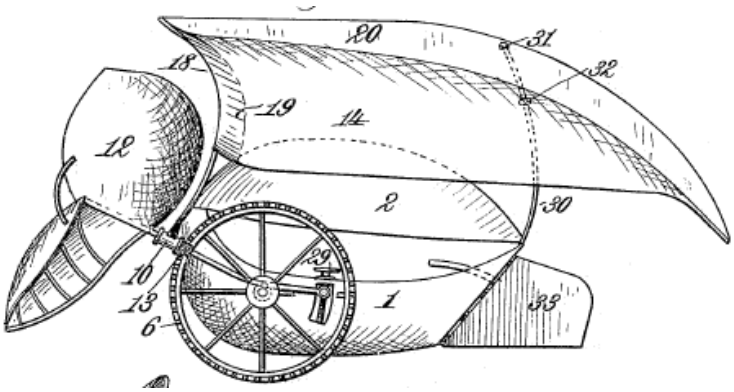
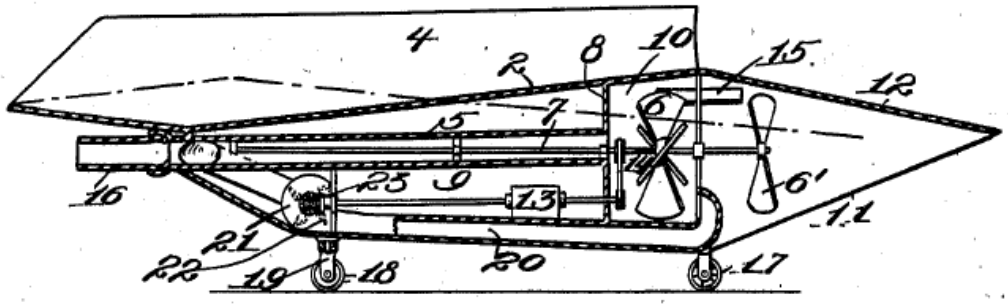
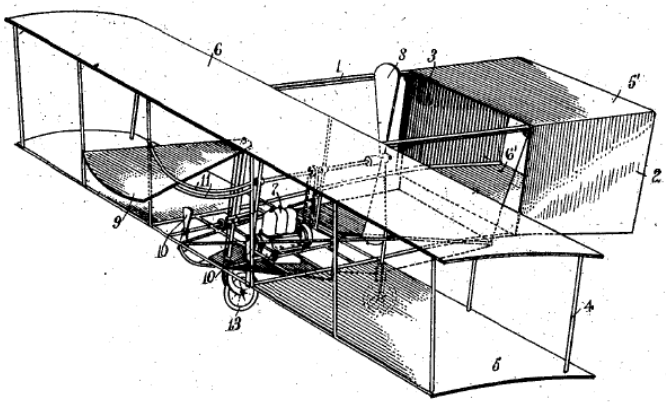
The Flying Machines of George W. Thompson







by Brad Mears

The Flying Machines of George W. Thompson

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Contents

Preface

This document, certainly too short to be called a book, is intended to capture and share information with other descendents of George W. Thompson. I believe that there is a great deal of information in here that will be new to them. Specifically, I document two additional patents of his that I believe are not generally known.

At points throughout this work, I present my own analysis of the aerodynamic qualities of his aircraft designs. Though neither a pilot nor an aeronautical engineer, I have been interested in airplanes and spacecraft my life entire life and my professional experience in the defense and space industry has given me a working knowledge of basic aeronautical concepts. Any errors in these analyses are my own.

This is not a biography of Thompson and does not attempt to recount other aspects of his life, interesting though they may be.

Chapter 1 - Introduction

In 1903, the Wright brothers were the first people to take flight in a heavier-than-air craft. However, they were by no means the only people attempting that historic feat. This goal was shared by many people across the nation and world. This is the story of one of those people, George W. Thompson of Kingston, Oklahoma. Some of this story takes place prior to Oklahoma gaining statehood in 1907, so some of the documents refer to Kingston, Indian Territory.

As an early pioneer in the field of aviation, Thompson experimented with various aircraft designs and over the span of eight years received three patents related to aircraft construction. The designs shown in these three patents were extremely different and show the wide range of concepts that Thompson was exploring.

Though there are few written records of Thompson's endeavors, we have been able to piece together part of his story. While we do not know whether he was successful in flying a full-size craft, his story and accomplishments make up an interesting piece of aviation history.

The following pages discuss reports of a scale model flight test, Thompson's three patents for flying machines, and the creation of The Kingston Aerial Company. There is also a discussion of the lasting effects his work had on other aircraft designers. Complete copies of all three of his patents are provided in the appendices. Some images from those documents also appear in the main body of this text. Also included in the appendices are copies of newspaper articles documenting some of his accomplishments.

Chapter 2 - The Earliest Records

The earliest written record we have about "Flying Machine" Thompson appeared in the Helen Herald on June 14, 1902. (Note that Helen was later renamed to Kingston.)

Unfortunately, no copies of that article still exist, as far as I can tell. However, excerpts from it were reprinted in later articles, one undated and the other in 1976. Those two articles are in Appendix D of this document. The excerpts in the two later articles are almost identical, the differences being minor and probably the result of editing for space.

In summary, the 1902 article documents a test flight that Thompson conducted in front of several witnesses, including the newspaper editor. Here is a re-typed version of the excerpt as it appears in the undated article.

> *"On Friday night, June 6, 1902, a number of Helen citizens visited the Herald office, in accordance with an invitation extended to them by the editor of the Herald, for the purpose of witnessing the most curious piece of mechanism on the face of the earth. The name of the inventor is G.W. Thompson, and no man is better known in all this region, as he has been in the ginning business for a number of years. He moved his gin from Kingston to Helen last summer. Everyone knew that Mr. Thompson was an expert machinist, and had made some ingenious improvements in the gin machinery, but no one dreamed that Mr. Thompson had long conceived the idea that he could make something that would fly. Pressure of business had allowed him no time to put his idea to the test, until last winter. He went to work with the most meager set of tools, in the most primitive workshop available, and now exhibits a steel eagle that gets up from*

the ground, by its own efforts, clears its way through the air, guides its way wherever its master wills, aye soars. This genius took for his model the flying bird and the steel eagle has literally followed the wing movement of the feathered tribe. Without any question, Mr. Thompson, has discovered and applied a principle in aerial navigation which has been ignored or unthought of by any other aeronaut of whom we have heard or read. We believe Mr. Thompson has it in his power to make a fortune for himself and a score of capitalists who are willing to invest in his enterprise."

The article was followed by an affidavit signed by citizens verifying that they had witnessed the exhibition of this machine. Those signing it were: W.A. Jolly, L.L. Wells, Dr. E.T. Lewis, Dr. Eldridge Martin, C.H. Terry, L.E. Gregory, J.T. Ringle, E.E. Ringle, C.B. Martin, J.A. Landram. This event may seem minor today, but when we remember that it was not until late 1903 that the Wright brothers made their first flight in Kittyhawk, it must have seemed like science-fiction to people in 1902. The June 4, 1909 Kingston Messenger has an account of Mr. Thompson getting a government patent for his flying machine model which he had been improving for a number of years. In 1911, he made a trip to Oklahoma City and bought parts to build his own full scale airplane. In July 1912, another news item in the Messenger states, "John Vaughn has put in his bid for the first ride in Judge Thompson's airship, "The Kingston", which is now ready for its initial trip as soon as the engine arrives." Nothing else could be found in the Messenger about the plane. Bill Akins, an early day resident, recalls seeing the machine. Mr. Thompson kept it in a shed just west of where French's store is now located. He said it had a wingspan of 14 ft. but as far as he knew they never made a trial flight with it.

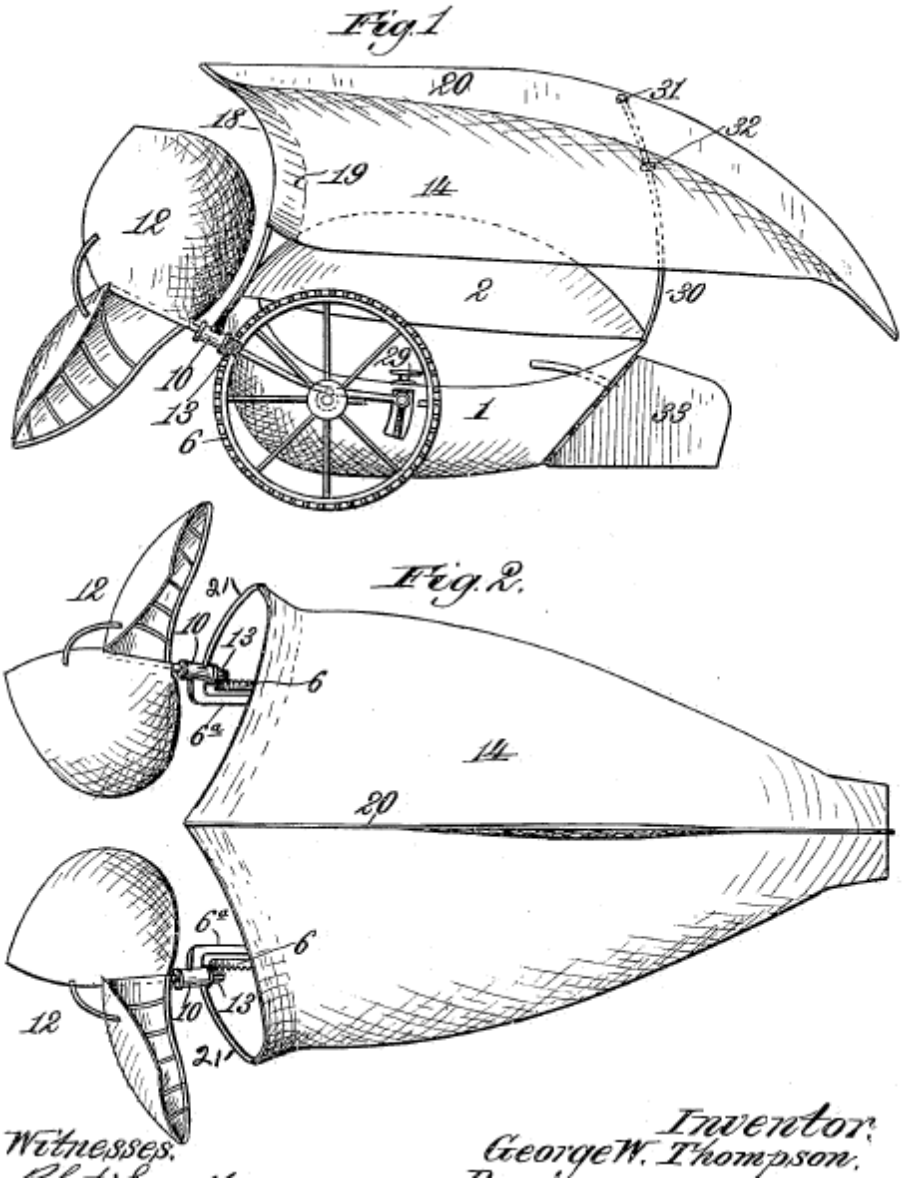
What can we glean from this account? It clearly shows that Thompson was experimenting with flying craft well before the Wright brothers made their first flight. Though the original article was ambiguous about the size of the craft, the author of the 1976 article in the Oklahoma City newspaper interviewed surviving eyewitnesses, who reveal that this craft was not full-size. As the article says, it was a "model plane". Beyond that, we cannot tell anything about the design of the model, the propulsion system or the manner in which it was controlled. Nor can we tell how long the test flight lasted or how high it got off the ground.

Clearly it wasn't a manned craft so how did he maintain control of it? It is possible that he used a tethered control system similar to the model planes from the 1960's and 70's that flew in a circle as the owner stood in the middle and tugged the control strings. This is, however, complete speculation on my part.

For further clues as to what this model aircraft may have looked like, we need to look at the first of three patents that Thompson received.

Chapter 3 – Patent #769,721

The first official record of Thompson's foray into aviation is found in a United States patent he filed in 1903 and received in 1904. Patent number 769,721 describes an aircraft that combined three different modes of lift and a striking visual appearance.



Design Features

To understand this design, view the top image and try to distinguish the three major components – the wing (14) or "hood" at the top, the fuselage (1) or "car" immediately below and the propellers (12). The fuselage contains an engine that turns a driveshaft connected to the two large wheels. These wheels have gears on the outer edge which in turn drive the propeller shafts. This means that the wheels will

constantly turn, even while the craft is in the air. (Near the end of this document, we will see how this design feature was re-used in a very modern craft in 2013.)

Though this craft appears strange to the modern eye, it actually has a lot in common with some very traditional aircraft. When you strip away the cosmetic differences and the use of a "hood" in place of a wing, this can easily be described as a high-wing, twin-engine airplane with an enclosed passenger compartment. It may not be as sleek as the craft shown below but the basic ideas are the same.

Thrust

The thrust for this craft comes from the two propellers at the front. From a modern perspective, these propellers are unusually thick and have a very large pitch. Combined with the cavity on the trailing edge of the blades, they were probably quite inefficient but would still be capable of generating thrust. One unusual aspect to the propellers and shafts is the substantial angle they make with the body, such that they force air both backward and downward. The intent of this downward airflow is to help provide lift, like a helicopter.

Lift

The other means of lift came from the airfoil shape of the "hood". Air rushing over an airfoil is an essential element of all aircraft design and it is interesting to see it in such an early effort. Additional lift was provided by hollow chambers in the canopy of the hood. These chambers would be filled with lighter-than-air gas, providing buoyancy. In practice, the volume of those chambers would have been too small to provide any significant effect.

Control

After thrust and lift, the next element in aircraft design is control. A rudder at the rear of provides yaw control. The size of the rudder compared to the rest of the craft is appropriate and it is likely that it would have performed sufficiently well.

For pitch and lift control, the pilot used a hand-crank mechanism in the cockpit to change the angle between the body and the hood/wing. This mechanism would have been awkward to use but would likely have provided some degree of pitch control as well as affecting overall lift. There is no apparent way to actively control the roll angle. The passive fin at the top of the craft is intended to act as a keel to keep the craft upright. It is unlikely that it would accomplish this goal.

Could It Actually Fly?

Despite the apparent “kitchen sink” design and somewhat unfortunate resemblance to a woman’s corset, this aircraft actually shows many viable elements of aircraft design. The fact that Thompson incorporated these features before the Wright brothers ever left the ground is a clear indicator that he stood at the forefront of the aviation industry.

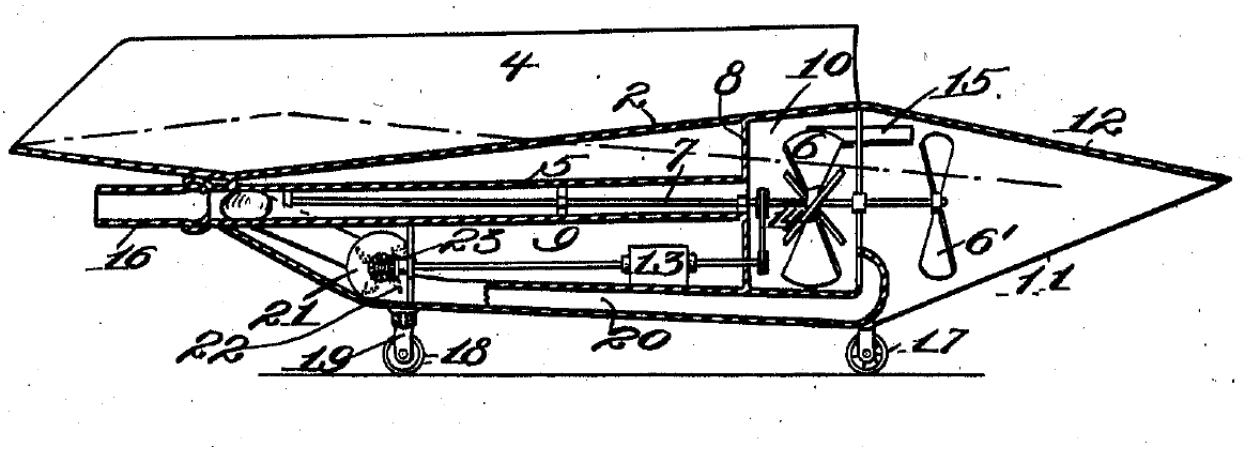
It is my belief that the very short overall length, short effective wingspan and pronounced height of the craft would make it unlikely to fly if built at full-scale. However, a reduced size model may well have been able to leave the ground.

Whether this craft, or one similar to it, flew or not is unknown. The newspaper article mentioned previously states that he successfully flew some sort of machine in front of witnesses in 1902. The application for this patent was made in 1903. Given how close these two events are in time, it is likely that the 1902 craft is similar to the one in this patent.

Chapter 4 – Patent #922,972

With his second design, Thompson introduced some radical new ideas. It is important to note that this patent was focused on his "new and useful Improvements in Flying-Machines" and not on the aircraft as a working whole. He submitted the application in 1907 and received patent number 922,972 in 1909. This unique and novel design is strikingly different from the other airplanes in use at the time.

Readers that grew up when aircraft were already in common use, especially jet aircraft, will look at the patent drawings and initially believe that the pipe on the left side of the top drawing is analogous to a jet exhaust. That would lead them to believe that the front of the aircraft is on the right in that picture. This is not the case; the pipe is at the nose of the aircraft and serves as an air intake. In modern terms, this is a single wing, pusher-prop concept where the dual propellers share a common shaft and are both fully enclosed within the body of the craft.



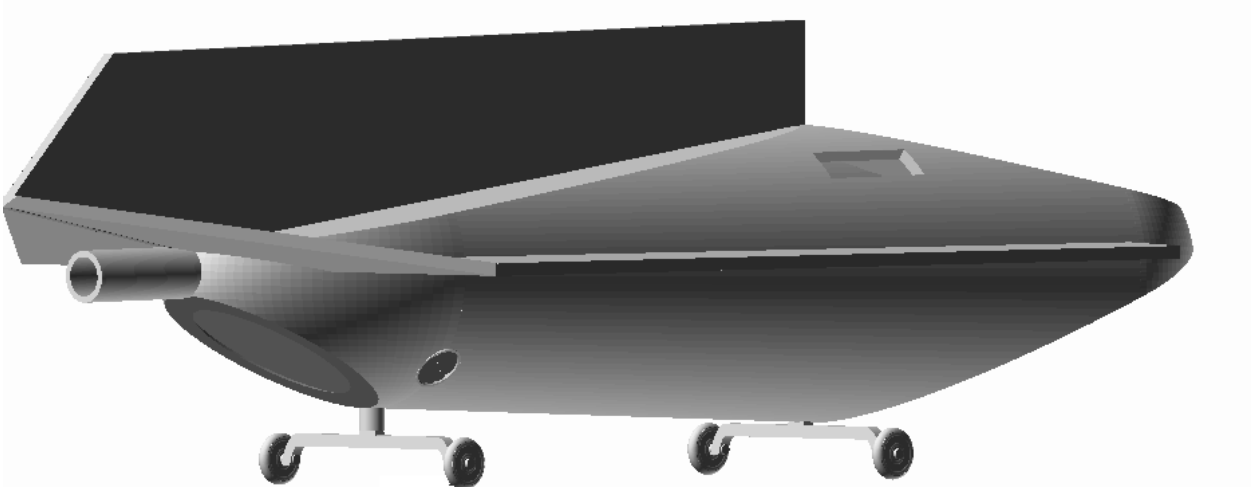
Design Features

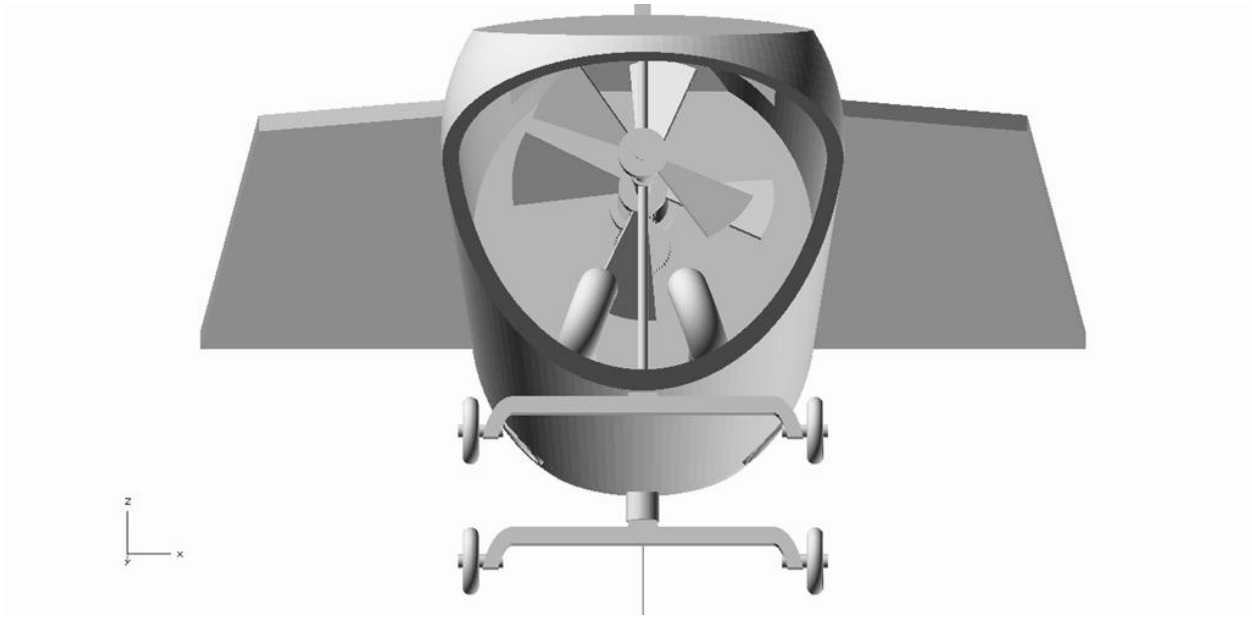
Careful reading of the patent reveals the design concepts that Thompson believed would make his craft capable of flight. The following paragraphs paraphrase and condense that writing. Note that many of his concepts are at odds with modern understanding of aerodynamic flight. It is important to remember that everything we know today about aerodynamics was still being uncovered by people like the Wrights and Thompson. The fact that his design was not fully viable reflects the fact that he was on the leading edge of an unknown science.

Thrust

The first question for any aircraft is "What provides forward motion?" The pipe (16) at the front of the aircraft is an air intake. This air is sucked in through the pipe via the action of the propellers (6 and 6') and expelled out the back through a cutaway section of the hull (11), providing thrust. Additional air is supplied via supplementary pipes (20) which get their air through dampers (24) on the sides of the craft. This additional air comes into the propeller chamber and is accelerated rearwards by the propellers.

Shown below are two images from a CAD model of this aircraft, created by this author. The front angle shows the intake pipe and dampers and the lower rear angle provides a view of the two enclosed propellers. Note that one of them has four blades and the slightly smaller one has two.





Lift

The second question is “What causes it to rise into the air?” There are three points on the craft that are intended to create lift. These three points are at the front, midpoint and rear.

First is the upwardly angled portion of the wing. As the craft is propelled forward into the airstream, the air will push against this angled surface and cause the front of the aircraft to rise.

Second are the two rectangular holes (15) near the rear of the vertical fin. These open up into the propeller chamber. As the propellers turn, they are supposed to create suction through these holes, resulting in lift along the midpoint of the craft.

Third is the flat hood or overhang (12) at the rear of the craft which is similar to the upwardly angled wing at the front. Air comes in through the pipe, bounces off the overhang to provide lift and is expelled through the opening 11.

Control

The third question to address is "How do you steer it?" There are two mechanisms that provide steering control. The intake pipe is on a horizontal swivel and can be turned from side to side. As it is turned to one side, it will suck in air from that direction, causing the aircraft to turn in the direction the pipe is pointed.

The second steering mechanism is through use of the dampers on the side if the craft. By opening just one at a time, a differential pressure is created, causing the craft to move in the direction of the open damper.

There is no apparent way to control the pitch (nose-up/nose-down) or the roll of the craft.

Could It Actually Fly?

The aircraft drawn and described in the patent would not have been capable of sustained, controlled flight. This opinion is based on my own analysis using basic aeronautical principles and was confirmed by a Flight Instructor and Professor of Mechanical Engineering at the United States Air Force Academy.

There are several design flaws that prevent this craft from being airworthy. Without going into great depth, here are some of the key points.

- It would be very difficult to move enough air through the pipe to generate any significant amount of thrust. Propeller-driven craft need to move a lot of air. The narrow intake pipe plus the fact that the pipe also served as a conduit for the propeller shaft and brackets would prevent sufficient airflow. Without enough airflow through the pipe, the craft could not develop enough forward speed to get off the ground.
- The wings do not have an airfoil shape to them and it is that shape that creates lift. Instead, they just are just flat planes which will catch air in the same way that your hand will rise up when stuck out of a car window. This effect is not truly aerodynamic lift and causes a huge amount of drag.
- The wings extend nearly the entire length of the body and are quite short. Maximum lift is derived from long, skinny wings. Short, deep wings cause a great deal of drag and little lift.
- There is only a limited way to control the yaw of the craft and no way to control pitch and roll. Modern aircraft use rudders, ailerons, elevators and flaps to control airflow and therefore the orientation and direction of travel of the aircraft. Without these, flight control would have been impossible.
- There is no apparent place for a pilot to sit.

It is my belief that the contents of this patent were not intended to describe a fully functional aircraft. Instead, the patent was intended to capture key design elements. It describes the angled planes on the wing and the overhang at the rear, the steerable intake nozzle and steering via differential pressure through the use of dampers as the ideas being claimed. If this interpretation is correct, this second patent was paving the way for a commercial venture that he started later on.

Concepts Before Their Time

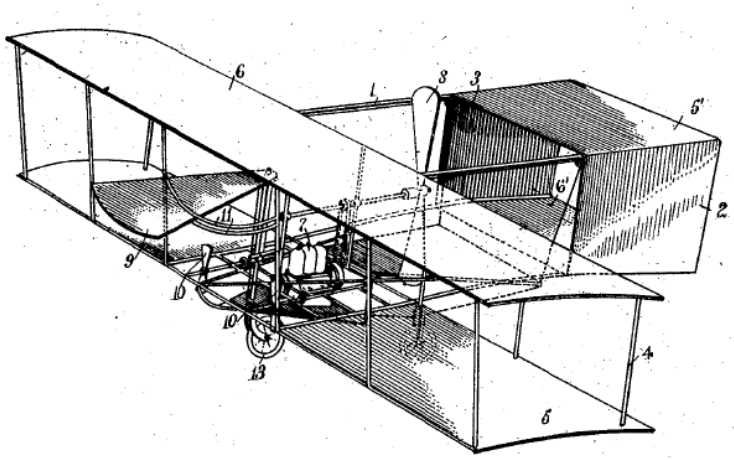
Despite the apparent problems with this design, there are two ideas in here that were decades ahead of their time. Vectored thrust and ducted fans came into use in the 1980's, several decades after this patent was awarded. Hints of these concepts are present in this design.

- Vectored Thrust
  Modern fighter aircraft use deflection panels behind the engine exhaust to increase maneuverability. The idea of using a steerable pipe for air intake is a similar idea.
- Ducted Fans
  Some modern designs encase the propeller in a ring. This ring serves to smooth the airflow and create greater thrust. Enclosing the propellers within the body and using an intake pipe is a similar approach.

Given that Thompson designed this in the early 1900's and didn't have an existing body of aeronautical design concepts to draw on, his design was revolutionary and showed a great deal of original thought. As we will see in the next chapter, elements of this design make it into his third, and presumably final, aircraft.

Chapter 5 – Patent # 1,010,986

This third design is by far the most sophisticated and airworthy craft that Thompson created. In it is found almost every aeronautical feature associated with modern aircraft.



Design Features

The first thing you notice about this craft is the biplane configuration. Here, Thompson replaced the short stubby wings of his first two craft with much more effective wings. Almost as significant is the use of three propellers. The largest of these (8) is at the rear and acts as a pusher-prop. The other two (10) are significantly smaller and located just off the centerline in the gap of the bottom wing. The large box-tail provides both lift and lateral stability.

Several other notable features are described below in the 'Control' section.

Thrust

The bulk of the thrust is provided by the large, rear propeller (8). Supplementary thrust can be provided by the auxiliary propellers (10). The size and design of these propellers is appropriate for this craft. Assuming sufficient power is available from the engine, they would have no difficulty providing the needed thrust.

Besides providing thrust, the two smaller propellers can also be used for steering. A mechanism is provided that allows the pilot to slow or reverse the direction of either or both of these propellers in flight. This is a form of the thrust reverser system found on all large jets and many twin-engine propeller craft.

Lift

The bulk of the lift comes from the upper and lower wings or planes as they are referred to in the patent. The drawing shows a clear air-foil shape so the wings should have been reasonably effective. Additional lift is provided by the horizontal surfaces of the box-tail.

Control

This is another area where this design makes gigantic strides. There are several distinct control mechanisms present. These correspond to the rudder, elevator, flaps and ailerons in use on most aircraft today.

At the front of the top wing is a pie-shaped control surface that can be rotated side to side by the pilot. Thompson describes this as a "balancing rudder" (9). A rudder is usually aligned vertically and affects the yaw of the craft. This balancing rudder is aligned horizontally and would affect the roll. This serves the same basic role as ailerons in modern craft.

Behind the lower wing is an "elevating rudder" (15). This is also aligned horizontally but rotates on a different axis than (9). It is used to control pitch and is quite similar to the elevators found on the tail of modern aircraft. This elevating rudder would also affect overall lift, similar to modern flaps.

Yaw control would occur through two mechanisms. The primary means Thompson intended to control yaw is through applying differential power to the auxiliary propellers. The other is the "balancing rudder" mentioned previously. Besides affecting roll, it would also have an effect on the aircraft yaw.

Could It Actually Fly?

It is my belief that this is a viable design and would have similar performance and success as other aircraft of the day. It should have been able to take flight.

This craft corrects the defects founds in the first two designs. The propellers would provide sufficient thrust and the wings would provide sufficient lift. Between the rudder, differential steering and adjustable flap, there would be sufficient control in all three axes to maintain attitude and directional control.

As with any untested design, there would certainly be adjustments needed based on the results of the test flight. Was the box-tail too large? Was the boom it was on long enough? Would the rudder-plane provide sufficient control? Should the auxiliary props be moved further outboard to provide greater steering control? These are all engineering issues that could have been addressed in time.

Chapter 6 - Retrospective

Comparison of the Three Designs

Visually, each of the three aircraft designs is strikingly different from the other. However, careful examination of the texts and drawings reflects some common ideas. It is interesting to see which aspect of each design was emphasized and which were de-emphasized.

The first patent shows the abundance of design ideas that abounded as people at the turn of the century struggled to determine what would constitute a successful aircraft. Showing elements of helicopters, fixed-wing airplanes and lighter-than-air craft, this design can be seen as his initial exploration into the theory of aviation.

The second design is the most distinctive of the three. Thompson was clearly focused on how to channel and direct the airflow internally via a small-diameter pipe, rather than externally. I believe his goal was to strictly control the airflow and apply the resulting pressure where needed to create lift. Though this would not have worked in practice, it shows a hint of two technologies that would later come into wide use - vectored thrust and ducted fans.

In the third patent, we see Thompson converge toward a more traditional design, if anything could be called "traditional" at that point in aviation history. We can see the "ducted fan" concept exemplified by the box-like tail section.

The Kingston Aerial Company

Though online records from that timeframe are scarce, one important piece of information can be found in archival copies of different Oklahoma newspapers in 1912. One such note, from the Carney Enterprise, dated April 12th, 1912, reads:

> *The Kingston Aerial company, of Kingston, has been chartered with a capital stock of $25,000. It will build and sell flying machines. The incorporators are residents of Kingston.*

The book *American Machinist Volume 36*, dated Jan – Jun, 1912, lists aeronautical companies founded in the past year and shows that the Kingston Aerial Company of Kingston, Oklahoma was founded with $25,000 in capital. The incorporators were G.W. Thompson, W.A. Williams, J.W. Little, B.B Steel and John S. Vaughn, all of Kingston. A similar entry can be found in *Aeronautics, Volume 10*, dated January 1912. The website http://www.bizapedia.com/ shows that a filing for the Kingston Aerial Company was submitted to the Oklahoma state government on April 2, 1912.

From the sources described throughout this article, we can conclude that by 1912, Thompson had assembled a full-size airframe and was in the act of procuring an engine for its first test flight. It is likely that the aircraft he built was substantially similar to the design shown in the third patent.

At the same time, a group of investors committed $25,000 (roughly $500,000 today), a rather substantial amount of money for a rural farming community. It can be inferred that Thompson's decade-long interest in aircraft and his reputation as a machinist and judge were sufficient to gather the investment needed to start this commercial venture.

After these initial news items, no other news about the Kingston Aerial Company can be found. Whether a working aircraft was made and whether a flight test was conducted is unknown.

Lasting Impact on the Aviation Industry

One measure of lasting impact is to look at how subsequent inventors built on his works. Two of Thompson's works were cited in later patents.

- 769,721: In 2013, a patent application was filed for a "Vehicle with aerial and ground mobility". This is application number 'US 20140061362 A1'. As alluded to in Chapter 3, it appears that this craft uses a mechanism to drive both the wheels and propellers.
- 922,972: In 1949, patent 'US 2465581 A' for "Airplane construction" references Thompson's second patent. The text of this 1949 patent claims applicability to aircraft, rocket ship and automobile construction. Several later patents cite this one.

In an interesting coincidence, at least two of Thompson's descendents went on to work in the aviation industry. James Thompson flew jet aircraft in the United States Air Force and this author worked on the software for NASA's Space Shuttle. One wonders if George Thompson would have been surprised that these things happened just decades after his fledgling attempts to take flight.

In any nascent technology, it is the work of many early developers that help determine what works and what doesn't. Others build upon those results and eventually a wealth of expertise and knowledge take hold. The resulting knowledge from all of these individuals helped to define aviation and changed our world. What is clear is that Mr. Thompson was one these early pioneers in the aviation field.

Author's Notes

I first became aware of my great-grandfather's interest in aviation in the 1980's, when a family member gave me a copy of patent 922,972. I looked at the pictures, skimmed the words quickly and, for thirty years, didn't think much about it. To the best of my knowledge, that was the only one of Thompson's patents known to his descendents.

In 2014, I became interested in 3D printer technology and was trying to think of something interesting that I could have made on a 3D printer. Suddenly I remembered George W. Thompson's Flying Machine and decided that this was the perfect project. It would let me explore a new technology and bring an interesting family footnote to life.

Off and on during 2014 I worked on creating a CAD model of the aircraft shown in this patent. This was time-consuming, tedious work because I had to reverse-engineer the measurements and angles from the hand-drawn figures in the patent. During these many late nights and long hours, I developed an affinity with Thompson. I could imagine him sitting at his kitchen table late into the night working on his designs, just as I was doing over a hundred years later.

As I was wrapping up the CAD effort and preparing to have it printed, I realized that other family members might be interested in seeing the model and learning some of the things I had discovered as I dissected the patent line by line. That was when I started writing this account. Wanting to be thorough in my documentation, I started looking online for any other information available about Thompson and his aircraft.

In an unexpected turn of events, my Internet research on Thompson and patent 922,972 revealed the existence of his earlier work and patent 769,721. It was with great excitement that I realized that his aviation research was more extensive than I had imagined.

As I gathered notes on these two patents and tried to figure out how to organize the material, I uncovered the existence of the Kingston Aerial Company. From there I went on to discover patent 1,010,986. Suddenly, I had information in hand that I had never dreamed existed.

At about the same time, I contacted one of Thompson's grand-daughters, my Aunt Erny. She made copies of several newspaper articles that she had in her possession and provided them to me. These were previously unknown to me and provided confirmation of some of the material I had found on-line.

When I started, I was under the impression that my great-grandfather was just another one of many that came in second when the Wrights made their first flight. Instead, I learned that he was persistent inventor with a number of cutting-edge ideas. He may not have found fame in the aviation field but I believe that he represents the finest tradition of American ingenuity and inventiveness. His contributions to aviation history may be subtle but they are nonetheless very real.

The fate of his aircraft and the Kingston Aerial Company are still a mystery to me but I hope that more information will be uncovered and help reveal what happened to them.

Brad Mears / November, 2014

References

This is a list of resources that provided information for my research.

- http://www.google.com/patents/US769721
- http://www.google.com/patents/US922972
- http://www.google.com/patents/US1010986
- http://www.google.com/advanced_patent_search
- Official Gazette of the United States Patent Office, Volume 185 (found on http://books.google.com/books)
- Personal diary of Ivy Rosalie Griffith Thompson
- Newspaper clippings provided by Ernestine Thompson Willits
- http://www.freepatentsonline.com
- http://invention.psychology.msstate.edu/PatentDatabase.html
- http://www.aerofiles.com/_ta.html
- American Machinist, Volume 36 (found on http://books.google.com/books)
- Aeronautics, Volume 10 (found on http://books.google.com/books)
- http://gateway.okhistory.org/ark:/67531/metadc87833/m1/2/
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- http://files.usgwarchives.net/ok/marshall/history/newspaper/newslist.txt

Appendix A – Patent 769,721

The following pages are scanned images of the PDF file available for this patent via Google patents. For a higher quality version, the PDF can be downloaded from Google.

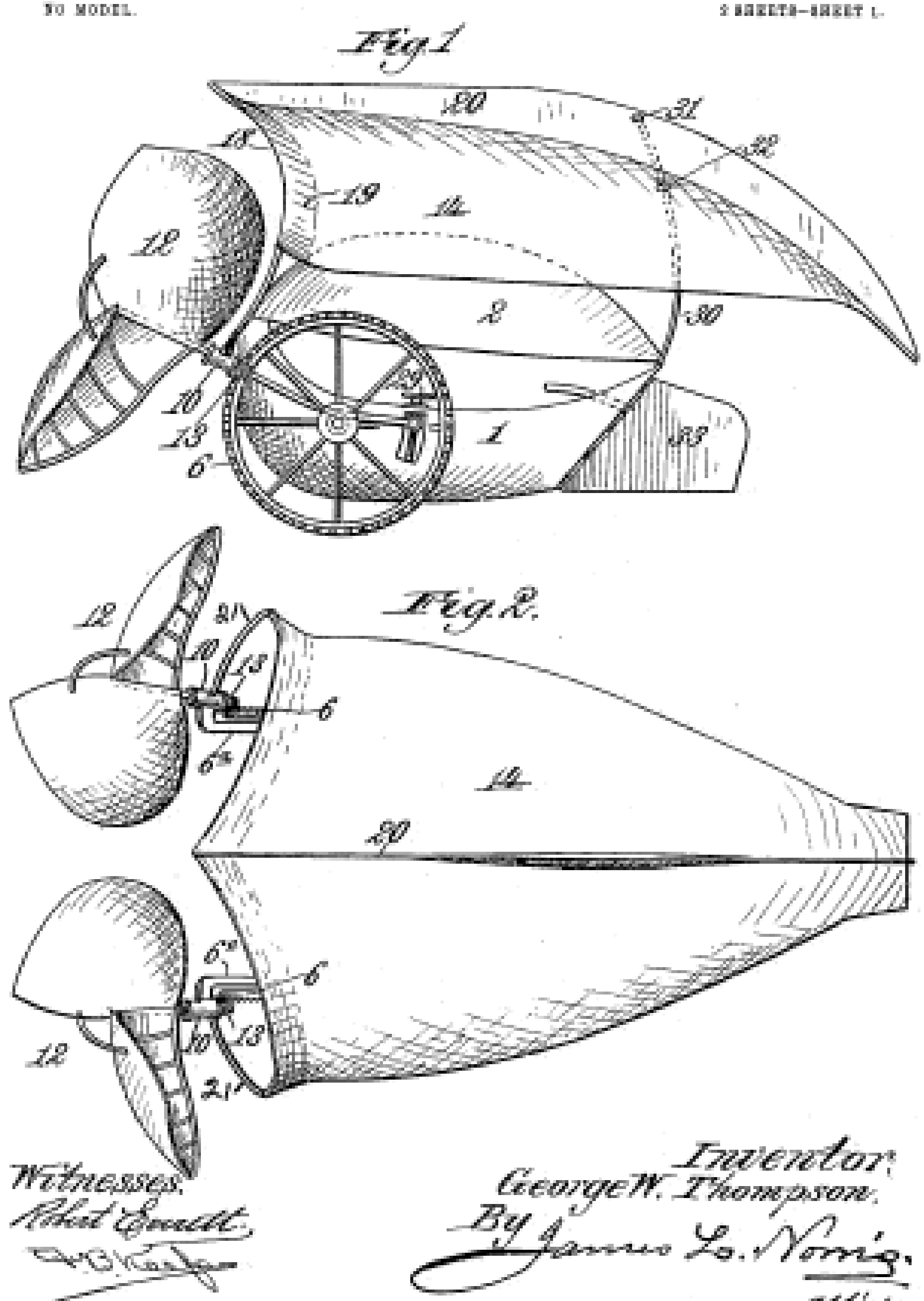
No. 769,721. PATENTED SEPT. 13, 1904.

G. W. THOMPSON.

FLYING MACHINE.

APPLICATION FILED JULY 9, 1903.

NO MODEL. 2 SHEETS—SHEET 1.



No. 769,721. PATENTED SEPT. 13, 1904.

G. W. THOMPSON.

FLYING MACHINE.

APPLICATION FILED JULY 2, 1903.

NO MODEL. 3 SHEETS—SHEET 2.

Fig. 3.

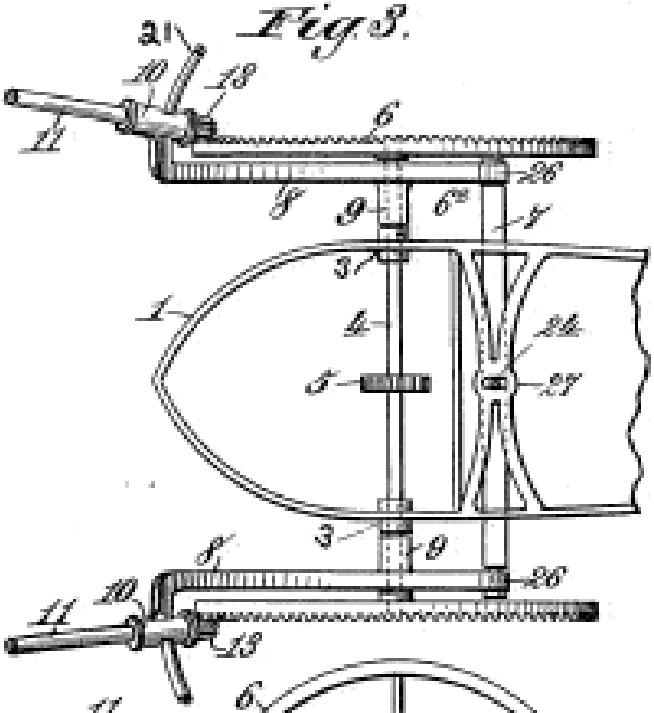


Fig. 4.

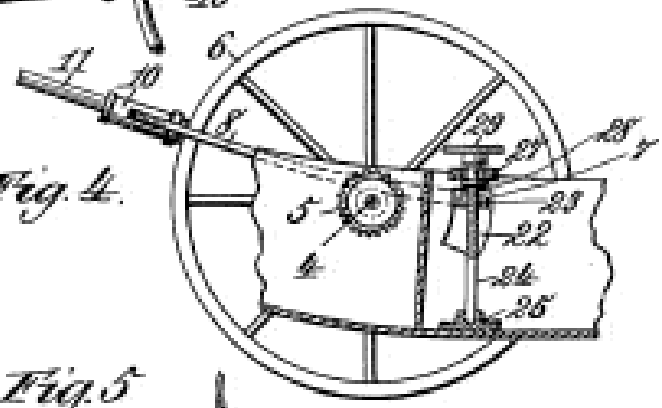
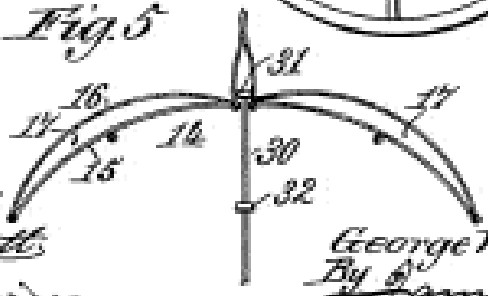


Fig. 5



Witnesses:
Abbot Sweadt.

Inventor:
George W. Thompson,
By James L. Norris.
Atty.

No. 769,721. Patented September 13, 1904.

UNITED STATES PATENT OFFICE.

GEORGE W. THOMPSON, OF WOODVILLE, INDIAN TERRITORY.

FLYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 769,721, dated September 13, 1904.

Application filed July 9, 1903. Serial No. 164,826. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. THOMPSON, a citizen of the United States, residing at Woodville, Indian Territory, have invented new and useful Improvements in Flying-Machines, of which the following is a specification.

My invention relates to improvements in the art of aerial navigation, and has for its object to provide an air-ship or flying-machine in which a series of propellers are located at the front of the machine and at such an angle to the horizontal that as said propellers are rotated their blades will beat downward upon the air and have a tendency to cause the machine to rise, to provide in connection with said propellers an adjustable hood, which is so arranged in relation to the propellers that the air will be forced by said propellers backward beneath the hood, and thereby increase the tendency of the machine to rise and to float in the air.

Detail objects of the invention relate to the construction, arrangement, and operation of parts, as hereinafter described, and particularly pointed out in the claims.

I have illustrated my invention in the accompanying drawings.

Figure 1 is a view in side elevation of an air-ship constructed according to my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a top plan view of a car-body, the top or cover thereof being removed. Fig. 4 is an enlarged sectional detail view illustrating the mechanism for raising the hood, and Fig. 5 is a transverse sectional view of the hood.

Referring now to the drawings, 1 indicates the car, which will be provided in any suitable manner with a cover or top 2. Suitably journaled in the bearings 3 in the forward part of the car is a driving-shaft 4, which is provided with a gear-wheel 5, by means of which the shaft may be rotated from any suitable source of power, as a gas-engine. The particular manner of driving the shaft, however, forms no part of my invention, and therefore no illustration thereof is made. It may be stated that the forward part of the car will constitute the engine-room, which will be divided from the rear part of the car, which latter will be suitably constructed for the purpose of carrying passengers.

On either end of the shaft 4 are provided large gear-wheels 6. Pivotally mounted on the shaft 4 is a frame comprising a longitudinal beam 7, at each end of which are provided forwardly-extending arms 8. The arms 8 are provided with sleeves 9, which are loosely mounted on the shaft 4 adjacent to the gear-wheels 6, by means of which sleeves the said frame is pivotally mounted upon said shaft. On the outer end of each arm 8 is a sleeve-bearing 10, each of which is adapted to loosely receive the stub-shaft 11 of a propeller 12. Each of the stub-shafts 11 carries a spur-gear 13, which is enmeshed with the adjacent large gear 6.

14 indicates a hood which, as shown by Fig. 2, has an outline the shape of a shield. Said hood is concavo-convex in cross-section and is preferably provided with two walls 15 16, providing a chamber 17, whereby the hood may be inflated with gas or other volatile medium. The walls 15 16 of the hood converge at the edges of the hood, however, so as to present a sharp edge to the hood at all points. The forward edge portion of the hood is preferably cut away on a circular line from the center to each edge, as indicated at 18, to provide a space for the movements of the propellers, and this forward edge portion of the hood is preferably upwardly inclined relative to the remaining body of the hood, as indicated at 19. The hood as a whole is or may be constructed in the manner of an umbrella when the same is raised—that is to say, it will comprise suitable frame-wires over which will be stretched silk, canvas, or the like. Extending along the median line of the hood on the upper side is a thin upwardly-projecting fin or rib 20, which is to assist in causing the machine to travel in a given path. In other words, the fin or rib 20 answers the same purpose as the centerboard of a sailing vessel and will tend to prevent the machine from drifting sidewise through the air. The forward frame-wires 21 of the hood have their outer ends secured to the sleeve-bearings 10. The hood 14 is thus connected to and forms a part of the frame formed

by the longitudinal beam 7 and the arms 8. The beam 7 extends through slots 22, formed in the sides of the car 1, and is provided with a screw-threaded bearing or aperture 23, through which extends a screw-threaded rod 24, having engagement at its lower end in a bearing 25 on the floor of the car 1.

The ends of the cross-beam 7 are pivotally mounted in the inner ends of the arms 8, as indicated at 26. The upper end of the screw-threaded rod 24 works loosely in a bearing 27 and is provided with a collar 28, engaging the under side of the bearing 27, and said rod is further provided at its upper end with a hand-wheel 29, by means of which said screw-threaded rod 24 may be rotated, and the cross-beam 7 will thereby be raised or lowered, the frame 6* as a whole rocking by means of the sleeves 9 on the shaft 4, so that by this movement the forward end of the hood may be raised or lowered and the hood as a whole thus inclined more or less to the horizontal, whereby the machine may be caused to rise or descend, due to the angle at which said hood strikes against the air.

Extending upward from the rear end of the car is an arm 30, which projects through the hood and is provided on its outer end with a button 31 and intermediate its ends with a collar 32, whereby to limit the movement of the hood in either direction.

On the rear of the car 1 provide a rudder 33, operative in any preferred manner, by means of which the machine as a whole may be guided to one side or the other.

Each of the propellers 12 consists, as shown, of two blades concavo-convex in shape and spirally arranged or disposed with their working faces or concaved sides toward the front edge of the hood 14. In revolving the edges of the propeller-blades pass in close proximity to the edges of the cut-away portions 18 of the hood, and the air is driven backward beneath the hood and up against the under side thereof. The arms 8 of the frame 6* are upwardly inclined, and this inclination of the arms causes the propellers to assume such a position that in revolving they beat downward upon the air, and thus cause the air-ship to rise.

In order to adjust the inclination of the hood 14, it is only necessary to turn the hand-wheel 29 in one direction or the other, which will cause the frame 6* to swing on the shaft 4, and thereby incline the hood as a whole to a more or less inclined position or to a practically horizontal position. The inclined portion 19 of the hood assists the same in riding up on the air, so to speak.

It will be seen that an air-ship constructed according to my invention is extremely simple in construction and possesses the great advantage of being very light, so that the power necessary for driving the propellers may be derived from a very small engine, such as a gas-engine.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an air-ship in combination with a car, a hood adjustably mounted above the same, a series of propellers disposed in front of the hood entirely below the upper edge portion thereof, said propellers being normally inclined relative to the hood and movable therewith, and means carried by the car for driving said propellers.

2. In an air-ship, in combination with a car, a hood adjustably mounted above the same and having a flaring forward edge, a rudder carried by the car, a series of propellers disposed in front of the hood entirely below the plane of the upper edge portion thereof, said propellers being normally inclined relative to the hood and movable therewith, and means carried by the car for driving said propellers.

3. In an air-ship, in combination with a car, an inflated hood mounted above the same and being concavo-convex in cross-section, a series of propellers disposed in front of said hood entirely below the upper edge portion thereof, said propellers being normally inclined relative to the hood and movable therewith, and means carried by the car for driving said propellers.

4. In an air-ship, in combination with a car, a hood adjustably mounted above the same and being concavo-convex in cross-section and provided with circular cut-away portions in its forward edge, a series of propellers disposed in front of said hood entirely below the upper edge portion thereof and adapted to work in said cut-away portions, said propellers being normally inclined relative to the hood and movable therewith, and means carried by the car for driving said propellers.

5. In an air-ship, in combination with a car, a driving-shaft mounted in the same and projecting from opposite sides thereof, gear-wheels mounted on each end of said shaft, a frame pivotally mounted on said shaft, propellers mounted in said frame, and provided with spur-gears in mesh with said gear-wheels, a hood mounted on said frame and located above the car, and means carried by the car for adjusting the inclination of said frame whereby to vary the position of the hood relative to the car.

6. In an air-ship, in combination with a car, a driving-shaft mounted therein and projecting from each side thereof, a gear-wheel mounted on each end of said shaft, a frame comprising a cross-beam adjustably mounted in said car and provided at each end with arms, sleeves carried by said arms and loosely mounted on said shaft, sleeve-bearings carried by the outer ends of said arms, a series of propellers, each of which is provided with a stub-shaft mount-

ed in one of said sleeve-bearings, a spur-gear mounted on each stub-shaft and in mesh with one of said gear-wheels, a hood carried by said frame and means on the car for raising and lowering said cross-beam, whereby to vary the inclination of said hood relative to the car.

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

GEORGE W. THOMPSON.

Witnesses:
JAMES L. NORRIS,
BRUCE S. ELLIOTT.

Appendix B – Patent 922,972

The following pages are scanned images of the PDF file available for this patent via Google patents. For a higher quality version, the PDF can be downloaded from Google.

G. W. THOMPSON.

FLYING MACHINE.

APPLICATION FILED NOV. 6, 1907.

922,972. Patented May 25, 1909.

Fig. 1.

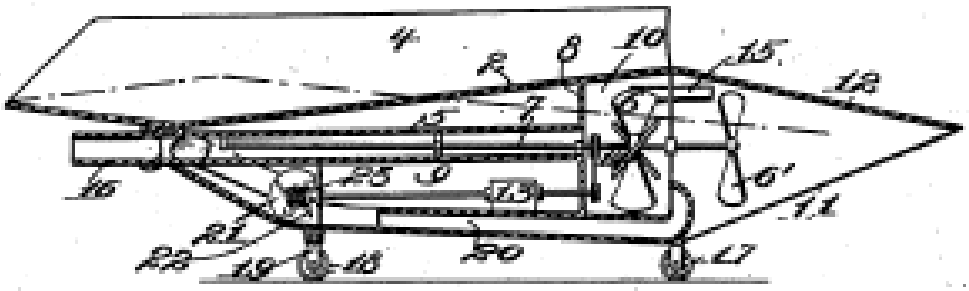


Fig. 2.

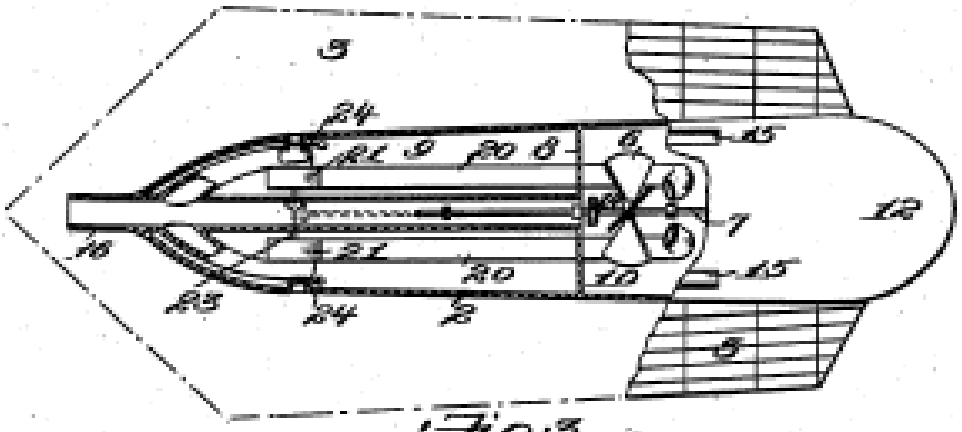
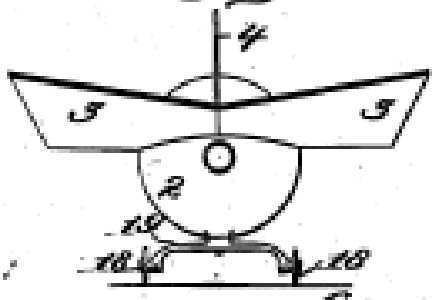


Fig. 3.



Witnesses:

Inventor

George W. Thompson

By James L. Norris

Atty.

UNITED STATES PATENT OFFICE.

GEORGE W. THOMPSON, OF KINGSTON, OKLAHOMA.

FLYING-MACHINE.

No. 922,972. Specification of Letters Patent. Patented May 25, 1909.

Application filed November 6, 1907. Serial No. 401,325.

To all whom it may concern:

Be it known that I, GEORGE W. THOMPSON, a citizen of the United States, residing at Kingston, Oklahoma, have invented new and useful Improvements in Flying-Machines, of which the following is a specification.

This invention relates to flying machines or, as they are sometimes known, air ships, and the object of the invention is to provide an effective apparatus of this type which is provided with means for navigating the air and for causing its ascent and descent at will, the apparatus also having means for readily steering the same.

The invention includes other advantageous features which with the foregoing will be set forth at length in the following description wherein is outlined that form of embodiment of the invention which I have selected for illustration in the drawings accompanying and forming a part of this specification.

Referring to said drawings: Figure 1 is a longitudinal central sectional view of a flying machine including my invention. Fig. 2 is a horizontal sectional view of the machine, and Fig. 3 is a front elevation of the same.

Like characters refer to like parts throughout the several figures of the drawings.

The air ship includes in its make-up a hollow body as 2, two side planes or wings as 3, and a vertically disposed fin as 4, the functions of which will hereinafter be set forth. Said three parts may be made of wood or light metal framing or a combination of such materials, covered with canvas or other suitable fabric, whereby strength and lightness are obtained.

The body 2 incloses a motor which may be of any desirable type, and propelling means, and, while said body may be of any suitable shape, it is shown as being approximately of ovoid form and somewhat elongated, by virtue of which the pressure of the outside air will be approximately uniformly applied to the outer surface of said body to thereby aid in holding the same steady when the ship or machine is traveling through the air with the small or reduced end thereof in front. The forward or front end of the body 2 is open and in the opening is fitted the forward end of a tube as 5 which latter may be of light metal or any other material suitable for the purpose. Through this tube 5 air currents are drawn by propellers as 6 and 6' located in the body 2 near the portion thereof of greatest diameter. Said propellers 6 and 6' are fastened suitably to the shaft 7 which extends through the tube 5 and is rotatively supported by hangers therein. The tube or duct 5 extends from the forward end of the body 2 nearly to the forward section of the propeller 6. The body 2 contains a partition as 8 located slightly in advance of the propellers 6 and 6', and this partition or wall 8 divides the body 2 into a front chamber 9 and a rear chamber 10. The rear end of the tube or duct 5 is sustained in an air-tight manner within an opening in said wall or partition 8, whereby the latter effectually separates the two chambers 9 and 10, the propellers 6 and 6' being located in said chamber 10.

The side planes or wings 3 extend practically the complete length of the machine or ship; they are transversely alined and are substantially in transverse alinement with the propeller shaft 7. The forward portions of these lateral planes or wings 3 are disposed at an angle in an upward forward direction and the reason of this will hereinafter appear. The rear portion of the body is cut away as at 11 on a downward forward inclination whereby there will be formed an exhaust opening for the air, such air being diverted in a downward direction by the overhanging downwardly inclined rear portion or hood 12 of the body 2.

The motor for operating the propellers 6 and 6' is denoted by 13 and it is supported upon the bottom of the machine interiorly thereof substantially amidships and is connected in any desirable way with the propeller shaft 7, for example, by gearing 14. When the motor is in action the propellers 6 and 6', through the intermediate parts, will be driven so as to suck air from the rear open end of the duct 5, the air being drawn rearwardly by the propeller and being directed against the inclined rear portion 12 which uplifts the rear end of the ship, the front end of the ship being uplifted by the pressure of air acting against the inclined front portions of the side planes or wings 3.

The fin 4, as indicated, is vertically disposed and it extends from the front of the ship toward but short of the rear enlarged end thereof. This fin, when the ship is soaring, holds the ship or vessel in an upright position and effectually prevents lateral or side motion thereof.

I have shown as formed in the body 2

above the planes or wings 3 the openings 15, such openings being located in adjacence to the blades of the propeller 6. Air is drawn by the propeller through these openings so as to cause sufficient suction thereat to help steady and aid in elevating the intermediate part of the ship.

I have jointed to the forward end of the tube or duct 5 a swinging tube 16 which in practice will be provided with connections extending into the interior of the ship and which connections will be manipulated for swinging the tube 16 sidewise for the purpose of steering or guiding the ship. When the longitudinal axis of the tube 16 is in coincidence with that of the tube 5 the ship will be propelled straight ahead. By swinging the tube 16 sidewise the path of the ship can be varied in accordance with the direction in which said tube 16 is swung.

At the rear portion of the ship and on the under side thereof are the wheels 17 the axle of which is supported by suitable bearings on the ship. In front of these wheels 17 are wheels as 18 carried by a yoke as 19 swiveled to the under side of the ship. When the ship is at rest those several wheels are on the ground and, when it is desired to start the ship, the propellers 6 and 6' are set in motion thereby advancing the ship along the ground with the wheels 17 and 18 in contact therewith. When sufficient momentum has been obtained the ship will rise. Just before the ship alights the propellers 6 and 6' are rapidly driven so as to impart an accelerated forward motion to the ship, whereby the latter can strike the ground gently.

Within the ship or body 2 are situated two auxiliary ducts each denoted by 20. These ducts 20 connect with the main duct 5 near the front end thereof and extend in a general rearward direction and are adapted to deliver air currents against the propeller 6, the rear terminal or delivery ends of said auxiliary ducts or tubes 20 being curved for this purpose. The ducts 20 are intersected substantially centrally of their lengths by casings as 21 which contain exhaust fans as 22 carried by a shaft 23 extending transversely of the ship and geared to the shaft of the motor 13 whereby said fans 22 can be operated from said motor. Under ordinary circumstances I can navigate the ship by the use of the duct or tube 5, but the efficiency of said ship is materially increased by the use of the two fans 22 located, as understood, at opposite sides of the main duct 5. The ducts, tubes, or flues 20 in practice are located in the interior of the body near the bottom thereof. The two fans 22 when in action draw some of the air from the duct 5, propel the same in a rearward direction, and deliver it against the propeller 6 or into the space between the propeller 6 and the companion propeller 6'.

It will be seen that the purpose of the propeller 6 is to drive as large a volume of air as possible rearwardly against the auxiliary propeller 6' and the said propeller 6 takes up the air fed thereto through the tubes 20, the latter, as shown by Fig. 2, having their rear terminals directed inwardly toward the center of the propeller 6 and the air forced through the tubes 20 in addition to the air sucked through the duct 5 will give a large amount of air adjacent to the propeller 6, but the latter is driven with considerable force from the motor 13 or overcomes any tendency of check of its operation by the air driven through the tubes 20, the fans 21 in the said tubes being considerably smaller than the propeller 6 and having less force. The object of this concentration of air in and about the propeller 6 is to give a greater volume to the current which is forced rearwardly and thrown by the auxiliary propeller 6' against the hood 12 to establish the buoyancy necessary at the rear end of the machine to carry out the operation sought. The openings controlled by the dampers 24 permit air to enter to either one or both of the fans, and when one damper is closed and the other allowed to remain open, the air on the side of the machine adjacent to the open damper will be drawn into the corresponding pipe 20 and the drawing action or suction on the air through the portion of the conduit leading forwardly to and communicating with the main conduit at the front extremity of the machine will be materially reduced and the remaining fan having the closed damper will then operate with full force alone through the said forward extremity of the main conduit. The forward extremity of the side of the machine having the one damper open will move with greater facility in turning the machine owing to the relief of the normal air pressure at said side of the machine and the tendency of the forward extremity to be drawn in the direction from which the air is taken. When both dampers 24 are closed, both fans 21 will operate to draw air into and from the forward extremity of the main central conduit, and under these conditions the machine will be kept in a straight course and the air forced rearwardly through the pipes or conduits 20 and delivered to the blades of the propeller in a manner as hereinbefore specified.

What I claim is:

1. A flying machine comprising a substantially ovoid hollow body, side planes fastened to the exterior of the body and extending longitudinally thereof, the front portions of said planes being inclined forward and upward, a vertically disposed fin on the top of the body, the rear of the body being cut away on a downward and forward inclination, a suction conduit in the body and extending longitudinally through the center of the body, conduits extending along the op-

posite sides of the body and having fans cooperating therewith, the front end of the body having an opening to receive the front end of said conduit, and a propeller in said body to draw air along said central conduit and to direct the same against the upper side of the body at the rear thereof, said rear upper portion being downwardly inclined.

2. A flying machine comprising a substantially ovoid hollow body, side planes fastened to the exterior of the body and extending longitudinally thereof, the front portions of said planes being inclined upward and forward, a vertically disposed fin on the top of the body, the rear of the body being cut away on a downward and forward inclination, suction conduits in the center and at opposite sides of the body and extending longitudinally thereof, the front end of the body having an opening to receive the front end of said central conduit, fans and a propeller in said body to draw air along said conduits and to direct the same against the upper side of the body at the rear thereof, said upper portion being downwardly inclined, and a swinging tube connected with the forward end of said body and communicating with the conduits.

3. A flying machine comprising a substantially ovoid hollow body, side planes fastened to the exterior of the body and extending longitudinally thereof, the front portions of said planes being inclined upward and forward, a vertically disposed fin on the top of the body, the rear of the body being cut away on a downward and forward inclination, suction conduits in the body and extending longitudinally thereof, the front end of the body having an opening to receive the front ends of the central conduits, a propeller and fans in said body to draw air along said conduits and to direct the same against the upper side of the body at the rear thereof, said rear upper portion being downwardly inclined, and a swinging tube connected with the forward end of said body and communicating with the conduits said body having opposite openings located in proximity to the propeller and for the passage of air therethrough to said propeller.

4. A flying machine comprising a substantially hollow body provided with a rear overhanging portion, air conduit means extending longitudinally through the body and merging at their front extremities and passing through the front end of the body, and means for drawing air through said conduits from their front ends and directing the air against said overhanging portion of the body.

5. A flying machine comprising a substantially hollow body provided with a rear overhanging portion, suction conduit means extending longitudinally through the body at the center and opposite sides, suction and propelling means coöperating with the said conduit means to draw the air along the latter and forcefully drive the same against said overhanging portion, and a swinging tube connected with the front end of the body and communicating with the said suction conduit means.

6. A flying machine comprising a substantially ovoid hollow body, a main suction tube in the body extending longitudinally thereof, propelling means at the delivery end of said suction tube, auxiliary suction tubes connected with the main suction tube near the forward end thereof and for delivering currents of air against said propelling means, and fan casings intersecting said auxiliary suction tubes and companion fans for propelling air through said auxiliary suction tubes.

7. A flying machine comprising a substantially ovoid hollow body, a main suction tube in the body extending longitudinally thereof, propelling means at the delivery end of said suction tube, auxiliary suction tubes connected with the main suction tube near the forward end thereof and for delivering currents of air against said propelling means, fan casings intersecting said auxiliary suction tubes and companion fans for propelling air through said auxiliary suction tubes, and means for throwing said fans out of action.

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

GEORGE W. THOMPSON.

Witnesses:
B. B. Strell,
R. L. Lindsey.

Appendix C – Patent 1,010,986

The following pages are scanned images of the PDF file available for this patent via Google patents. For a higher quality version, the PDF can be downloaded from Google.

G. W. THOMPSON.

AEROPLANE.

APPLICATION FILED NOV. 10, 1910.

1,010,986.

Patented Dec. 5, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

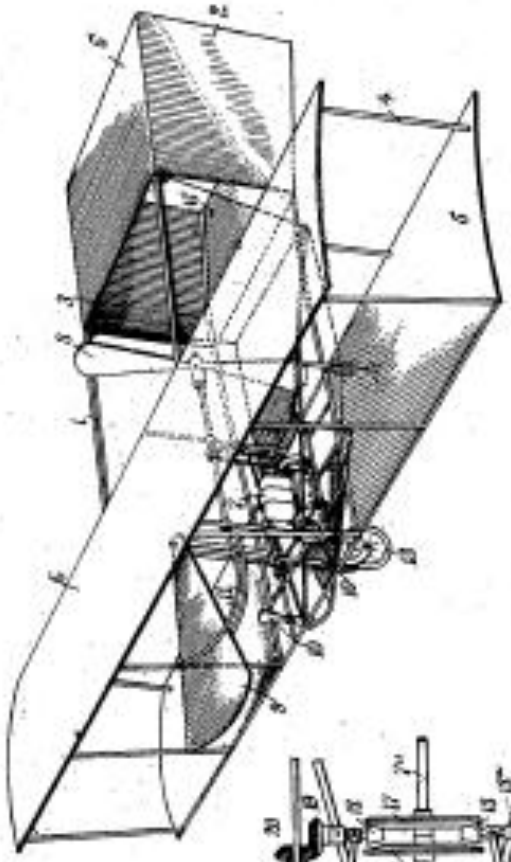
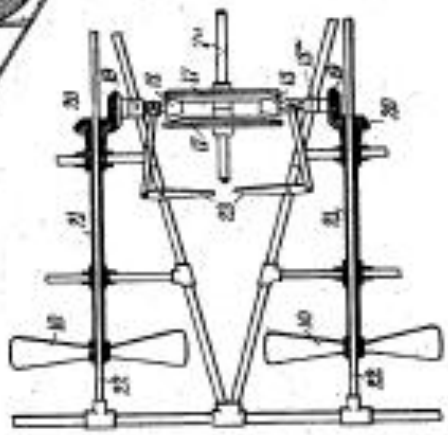


Fig. 4.



WITNESSES

INVENTOR

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BY

ATTORNEYS

G. W. THOMPSON.

AEROPLANE.

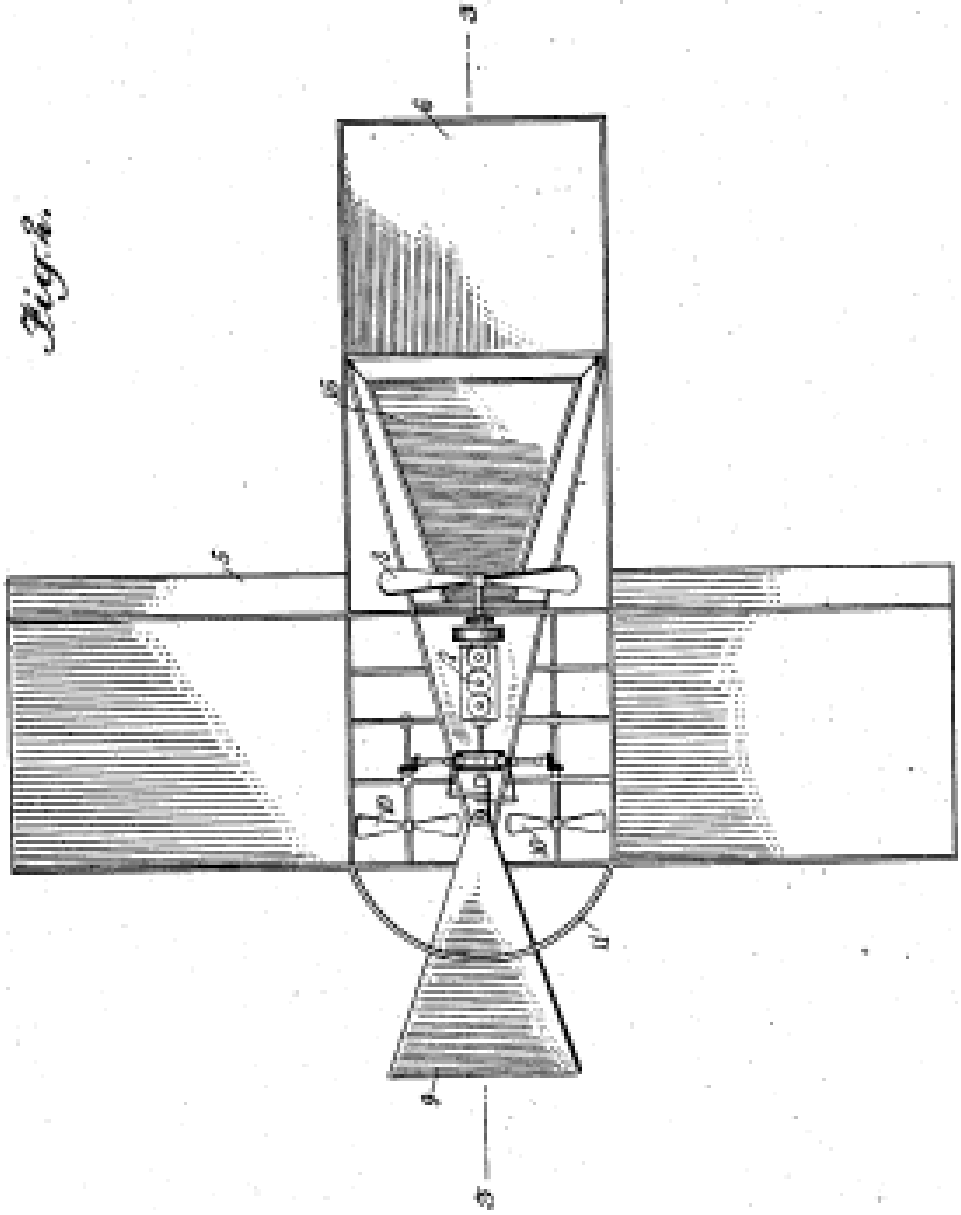
APPLICATION FILED NOV. 18, 1910.

1,010,986.

Patented Dec. 5, 1911.

2 SHEETS—SHEET 2.

Fig. 2.



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ATTORNEYS

G. W. THOMPSON.

AEROPLANE.

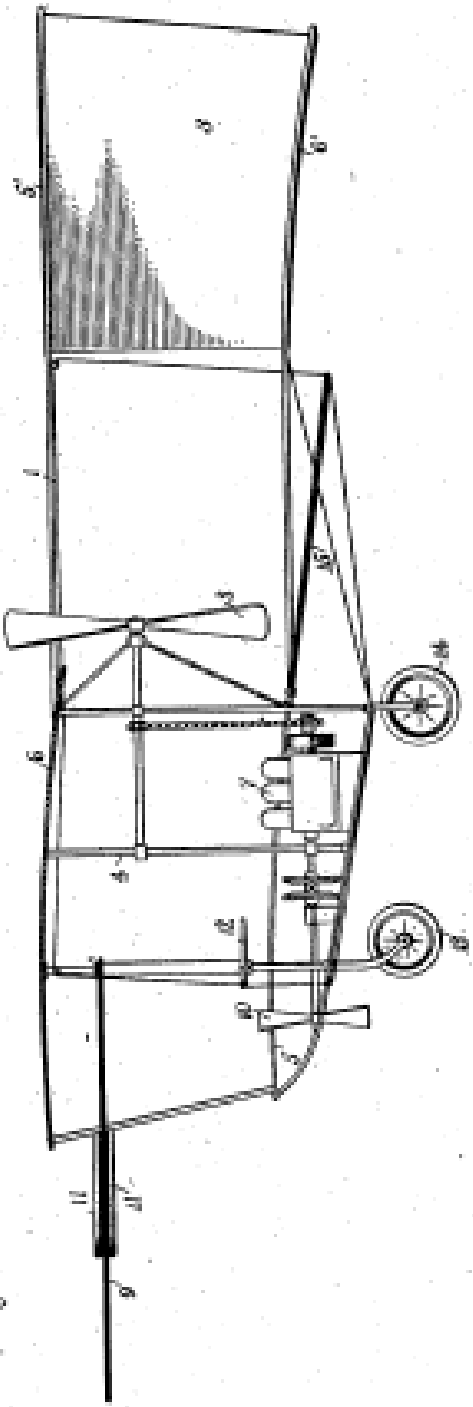
APPLICATION FILED NOV. 18, 1910.

1,010,986.

Patented Dec. 5, 1911.

3 SHEETS—SHEET 3.

Fig. 3.



WITNESSES

INVENTOR

George W. Thompson

BY

ATTORNEYS

UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON THOMPSON, OF KINGSTON, OKLAHOMA.

AEROPLANE.

1,010,986. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed November 18, 1910. Serial No. 592,993.

To all whom it may concern:

Be it known that I, GEORGE W. THOMPSON, a citizen of the United States, and a resident of Kingston, in the county of Marshall and State of Oklahoma, have invented a new and Improved Aeroplane, of which the following is a full, clear, and exact description.

My invention relates to flying machines of the heavier-than-air type, and my object is to provide a machine of this class which has its propellers so arranged that they not only drive the machine but steer it also. By such a construction I minimize the necessity of using movable rudders heretofore used to control the machine's course of travel.

A further object of my invention is to arrange the parts so as to keep the machine properly balanced and prevent it from becoming top-heavy. This I accomplish by locating the power plant directly below the center of gravity of the supporting planes, and by the manner in which the planes are tilted with reference to the line of travel.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of my improved aeroplane; Fig. 2 is a plan view of the lower half of the machine, showing the engine and the propellers; Fig. 3 is a longitudinal section through the middle of the aeroplane; and Fig. 4 shows the steering propellers and their controlling gear.

The aeroplane illustrated in the accompanying drawings is in the form of a biplane having forward lifting planes 5 and 6, which are connected to each other by a suitable framework 4. My aeroplane is also provided with a tail portion to the rear of the lifting planes 5 and 6, and spaced therefrom, but connected to the body of the machine by suitable framework 1. This tail portion has horizontal planes 5′ and 6′ and vertical planes 2 and 3. The upper lifting plane is continuous, but the lower lifting plane is cut away in the middle to accommodate the engine or motor 7, the same being located below the level of the plane 5 so as to have its center of gravity below the center of gravity of all the planes of my flying machine. The open spaces between the engine and the lower planes give room for the propellers and their control mechanism.

In order to propel the aeroplane use is made of a driving propeller 8 and for steering purposes use is made of steering propellers 10, 10, the said propellers 8 and 10, 10 being mounted on the framework 4. The propeller 8 is driven by the motor, directly or through sprocket gearing, as shown; and the propellers 10 are connected to the motor by transmission mechanism which includes reversing mechanism, so that the propellers 10 can be rotated forward or backward, as will be described later.

Numeral 9 indicates a balancing rudder which is preferably fan-shaped or sector-shaped and is mounted to be moved by means of suitable levers around a vertical axis passing centrally through the front part of the planes 5 and 6. This rudder is guided and supported near its outer end in a guideway formed of curved bars 11, one above and one below the rudder, and connected at their ends rigidly to the vertical trusses of the framework. The rudder 9 is, of course, supported at the necessary angle to the horizontal, so that the air will react against its surface and enable the rudder 9 to assist in supporting the machine exactly as in the case of the planes 5 and 6.

15 is the elevating rudder arranged at the rear of the lower plane 5. This rudder is mounted to be swung to some extent around a horizontal axis transverse to the direction of travel, the said axis being preferably about on the same line as the rear edge of the lower plane 5. By lowering the rear end of the rudder 15 (which can be done by levers or cords), the vertical component of the reactive force can be increased, causing the rear of the aeroplane to rise, and thus keep the machine horizontal.

Referring to Fig. 3, it will be noted that the lifting plane 6 and tail plane 6′ are tilted to a greater extent than the lifting plane 5 and tail plane 5′. The lifting moment of the front planes 5 and 6 with reference to the center of gravity of all the planes will be approximately balanced by the lifting moment due to the two rear planes 5′ and 6′ and to the elevating rudder 15. Therefore, the machine will not tilt upward or downward along its line of flight, and the center of gravity of the planes will always be kept directly above the engine.

At the same time the sideward sweep of the forward wings 5 and 6, together with the rudder 9, will provide all the conditions of lateral equilibrium, and the aeroplane will be always perfectly and easily balanced.

The main shaft 7ª shown in Fig. 4 has two friction gears 17 fixed thereon. 18 are friction wheels mounted on shafts arranged to swing on pivots 18ª on the framework. Each shaft 18 bears a miter gear 19, meshing with a gear 20 on a hollow shaft 21. These hollow shafts are supported on parts of the framework 22 and transmit power to the steering propellers 8. The friction gears 18 are controlled by levers 23. The gears 19 and 20 have a loose fit, so that the friction wheels 18 can be moved into contact with either friction gear 17, without disengaging the gears 19 and 20. By this construction either or both the propellers 10 can be rotated forward or backward, or they can be thrown out of action entirely by moving the gears 18 to a position midway between the two wheels 17. The two propellers 10 are of course equidistant from the main shaft 7ª.

The rear rudder 15, being located between the front and rear lower planes, serves to equalize the fore and aft lift of the planes. It is so connected that it cannot be raised above the level of the rear plane 6, and it does its work by being pulled down at its rear to a sufficient extent to keep the machine from climbing into the air, and to help the lift of the rear planes to keep the body of the machine substantially on a level. By raising the rear end of the rudder 15, the opposite effect is produced and the aeroplane permitted to rise.

In operation, the propeller 8 drives the machine and the aeroplane is turned to the right or left by means of one or the other of the steering propellers 10. The speed can be increased if desired by starting both propellers 10 and causing them to assist the main propeller 8, or the speed can be decreased by starting them both in the opposite direction. All these results can be obtained without in any manner interfering with or adjusting the engine. If the machine tilts to one side, the balancing rudder is swung over to the side that is sinking, thus increasing the lifting surface on that side and righting the machine. If the rear of the machine sinks, the rudder 15 is lowered, and if it be desired to fly upward, the rudder 15 is pulled slightly upward, causing the machine to travel upward. The rudder 9 is controlled by a lever 12, which also controls the guide wheel 13. Supporting wheels 14 are also provided.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In an aeroplane, the combination of superposed lifting planes and superposed tail planes, the lifting and tail planes being spaced apart, the upper lifting and the lower tail plane being tilted at a different angle from the other planes.

2. In an aeroplane, the combination of superposed lifting planes and tail planes spaced apart, the upper lifting and the lower tail plane being tilted at a different angle from the other planes, and an elevating rudder between the lifting and tail planes.

3. In an aeroplane, the combination of superposed lifting and superposed tail planes spaced apart, the upper lifting and the lower tail plane being tilted at different angles from the other planes, a balancing rudder and an elevating rudder to swing up and down, adjustably mounted on a transverse horizontal axis between the lifting and tail planes.

4. In an aeroplane, the combination of a lifting plane, a balancing rudder pivotally connected to said aeroplane to be adjusted around a vertical axis and extending forward of the plane, and a pair of curved bars carried by said aeroplane, said balancing rudder passing between said curved bars to be guided thereby when the rudder is moved to adjusted position.

5. In an aeroplane, the combination of a lifting plane and a tail plane spaced apart from the lifting plane, the lifting plane and the tail plane being tilted at the same angle, an elevating rudder located between the lifting plane and the tail plane, and a motor carried by said aeroplane beneath the center of gravity of the said planes and said rudder, the lifting moment of the lifting plane being equal to the lifting moment of the elevating rudder and the tail plane.

6. In an aeroplane, the combination of superposed lifting planes and superposed tail planes spaced apart, the upper lifting and the lower tail planes being tilted at different angles from the other planes, the angle of tilting of the said upper lifting and the lower tail planes being equal, and an elevating rudder located between the lifting planes and the tail planes.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE WASHINGTON THOMPSON.

Witnesses:
J. A. Brabs,
I. P. Crabtree.

Appendix D –Newspaper Clippings

The following scanned images are from copies of newspaper clippings provided by Ernestine Thompson Willits, one of Thompson's grand-daughters. Some of these articles were written at or around the time that Thompson was actively engaged in building his aircraft. Others were published years later.

All but one of these shows the publication date, either printed in the heading or in a hand-written note at the top or bottom of the page. The publication date of the first article ("Our Proud Heritage") is unknown though it was probably printed sometime after 1967. There is a picture on the photocopied page that references "Leon's Greenhouse". The website for Leon's greenhouse says they have been in business since 1967. However, it isn't clear whether the picture was printed at the same time as the article so that date is not conclusive.

According to usgwarchives.net, the Helen Herald operated from 1903 to some unknown date and the Kingston Messenger operated from 1902 to 1923. Since the town of Helen became Kingston, it is possible that the Helen Herald became the Kingston Messenger but that is far from certain.

Our Proud Heritage—

Fame Is Fleeting

Fame can be so near and yet so far away. Thus, it seems to have been with one of Kingston's earliest settlers, Mr. G. W. Thompson, remembered by many pioneers as the "Flying Machine" Thompson.

Excerpts from a long article printed in the June 14, 1902, Helen Herald follows:

"On Friday night, June 6, 1902, a number of Helen citizens visited the Herald office in accordance with an invitation extended to them by the editor of the Herald for the purpose of witnessing the most curious piece of mechanism on the face of the earth.

"The name of the inventor is G. W. Thompson and no man is better known in all this region as he has been in the ginning business for a number of years. He moved his gin from Kingston to Helen last summer.

"Everyone knew that Mr. Thompson was an expert machinist and had made some ingenious improvements in the gin machinery but no one dreamed that Mr. Thompson had long conceived the idea that he could make something that could fly. Pressures of business had allowed him no time to put his idea to the test until last winter. He went to work with the most meager set of tools in the most primitive workshop imaginable and now exhibits a steel eagle that gets up from the ground by its own efforts, clears its way through the air, guides its way wherever its master wills, aye, soars.

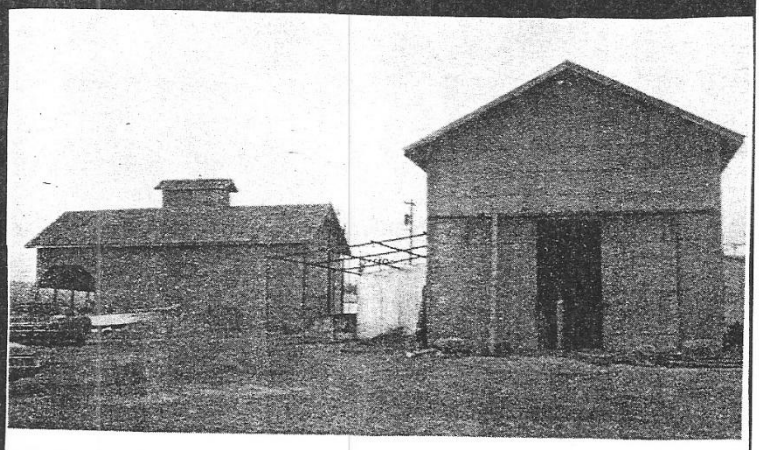
"This genious took for his model the flying bird and his steel eagle has literally followed the wing movement of the feathered tribe. Without any question, Mr. Thompson has discovered and applied a principle in aerial navigation which has been ignored or unthought of by any other aeronaut of whom we have heard or read.

"We believe Mr. Thompson has it in his power to make a fortune for himself and a score of capitalists who are willing to invest in his enterprise."

The article was followed by an affidavit signed by citizens verifying that they had witnessed the exhibition of the machine. Those signing it were: W. A. Jolly, L. L. Wells, E. D. Macready, Dr. E. F. Lewis, Dr. Eldridge Martin, C. H. Terry, L. E. Gregory, J. F. Ringle, E. E. Ringle, C. B. Martin, M. D., J. A. Landram.

This event may seem minor today, but when you remember that it was not until late 1903 that the Wright brothers made their first flight of 120 feet in the Kitty Hawk, you realize it must have seemed like something out of science-fiction to people in 1902.

The June 4, 1909, issue of the "Kingston Messenger" has an account of Mr. Thompson getting a government patent for his flying machine model which he had been improving for several years.



REFLECTING an earlier era, these buildings now used by Leon's Greenhouse are all that remain of five gins that served Kingston area farmers back when cotton was king and the backbone of the economy in Marshall county.

Kitty Hawk, or Kingston?

Oklahoma City Paper
7-11-76

By John Clift

Flying Machine Thompson was his name, flying was his game! And this intrepid Indian Territory inventor did indeed get his plane in the air more than 18 months ahead of the Dec. 17, 1903, flight at Kitty Hawk, N.C., that made the Wright Brothers, Orville and Wilbur, world-famous.

G.W. (Flying Machine) Thompson (technically speaking) got his powered airplane off the ground on June 6, 1902, in the presence of 11 prominent Kingston, I.T., citizens.

And although the honors of the Wright Brothers are not contested, all 11 Kingston citizens signed an affidavit that they witnessed the flight.

The editor of the Helen Herald — Helen being the name originally given the town of Kingston that was rejected by the post office and Kingston later substituted — wrote later that he had personally invited the citizens to witness the flight.

"On Friday, June 6, 1902, a number of Helen citizens visited the Herald office in accordance with an invitation extended to them by the editor of the newspaper for the purpose of witnessing the most curious piece of mechanism on the face of the earth.

"The name of the inventor," the paper recorded, "is G.W. Thompson. No man is better known in all of this region as he has been in the ginning business for a number of years. He moved his gin from Kingston to Helen last summer.

"Everyone knows that Mr. Thompson was an expert machinist and had made some ingenious improvements in gin machinery, but no one dreamed that Mr. Thompson had long conceived the idea that he could make something that could fly," the article continued.

The pressures of business had not allowed Thompson extra time to put his idea to the test until the winter of 1901. But Thompson, whose tales of building a machine with wings that would fly had gained him the nickname of "Flying Machine," was convinced that if the eagle could fly, so could man.

While the tools Thompson worked with were fine for their purpose — building and operating cotton gins — they were not exactly what the doctor ordered when it came to building a flying machine.

Thompson patterned his machine after the eagle. His steel eagle literally followed the wing movement of the feathered model.

The Helen editor reported, "Without any question, Mr. Thompson has discovered and applied a principle in aerial navigation which has been ignored or unthought of by any other aeronaut of whom we have heard or read.

"Working in a primitive shop with the crudest tools imaginable, Mr. Thompson now exhibits a steel eagle that gets up from the ground by its own efforts, clears its way through the air, guides its way wherever its master wills. Aye," enthused the editor, "it soars!"

The editor was so sold on the plane designed by Thompson that he had called in this group of prominent Helen or Kingston businessmen to see it for themselves.

"We believe Mr. Thompson has it in his power to make a fortune for himself and a score of capitalists who are willing to invest in his enterprise," the editor wrote after the exhibition.

The affidavit proved conclusively that the "flying eagle indeed had flown." And apparently Thompson got some financial backing for his "flying machine" because subsequent articles told of Thompson getting a patent on the machine.

However, the patent was not forthcoming until 1909. And in 1911 Thompson journeyed to Oklahoma City and bought parts to complete a new plane he dubbed "The Kingston."

He ordered an engine out of Oklahoma City and wheeled his finished plane into a shed just off Main Street in downtown Kingston. The airship had a wingspan of 14 feet.

Many elderly Kingston residents today can still recall seeing "The Kingston" airship. But they always saw it the same way — on the ground.

One of the business leaders of Kingston had bought a ticket from Thompson "for the first ride." History never tells whether or not he ever used that ticket.

If Flying Machine Thompson got his plane off the ground 18 months before the Wright Brothers, why wasn't he accorded the fame they received?

It took a combination of an interpretation of the editor's writeup plus some recollections by some oldtimers in Kingston to bring the story into its final proper focus.

You see, that plane that the 11 businessmen saw "fly like an eagle" was just a model plane.

The mystery of why Thompson was able to build a model plane so much earlier than the Wright Brothers, and yet never got a life-sized model off the ground, remains today the same thing it was 75 years ago — a mystery.

Thompson never lost favor with his peers, and later was elected a judge, and still later became mayor of Kingston. But Flying Machine Thompson's flying machine lived out its life in a Kingston shed. ■

June 1, 1912

CONSTRUCTING A FLYING MACHINE.

Will Soon be Ready to Navigate In the Air.

For some years Capt. Geo. W. Thompson, of Kingston, has been studying air navigation and has been working out his plans for the construction of a successful machine. He has examined the construction and mechanism of the various machines, noted their good points and their defects, and has planned a machine he thinks will be superior to any yet built. His model has been examined by experts and it is generally conceded that his ideas solve many problems in air navigation. Mr. Thompson is now at work building a machine for trial, and hopes to have it ready for practical demonstration by the first of July. A company has been formed for the manufacture of the machine, and all are waiting anxiously for the trial trip of the "Kingston."

"Some one surely sees the "Handwriting on the Wall."

"We want honest men for office and honest men to hold the elections."

"Fraud should be no more tolerated in the holding of elections than in any business transaction. We say give us an honest, fair count of legal qualified voters, and no more."

The above extracts are from the

8

May 18, 1912

PREPARING TO CONSTRUCT AEROPLANE

Capt. Geo. M. Thompson left for Oklahoma City the first of the week to look after the shipying of a Curtis aeroplane, which he has purchased and will use parts of the machinery in the bnilding of an aeroplane on his own plans. It will be remembered that a company was organized here for the building of these machines, and rapid sale of the stock in the company is being made. Mr. Thompson expects to have one of his machines in operation in a short time.

The best of everything to eat at the Palace Cafe.

Cigars, the kind you like, at the Model Drug Co.

Kodak films for sale. Skipworth, the photographer.

June 4, 1909

E BALL.

ys Practice Game Madill.

y was a time set ch game of base- e Kingston school ll, but the result to be in reality game for Kings- the Kingston team d their places fil- rs, who had had ice, and the Madill be off for some ot coming up to dard. They were ed by the Kings- n the start Kings d and held it to

ns were made by by Henry Click dy Smathers, but he umpire, Andy to make his run ond base, which credit for only

plays were made

them from being "goose-egged." The last half of the ninth inning when the game was called off, the score stood, Kingston 19, Madill 5.

Kingston Man Patents Flying Machine.

In the list of patents that have been issued by the government patent office, is one for a flying machine to Geo. W. Thompson, of Kingston. He has been work- on this proposition for sometime and has been taking note of what has been done by others, until he now thinks he has the most practical machine that has yet been made. He has been working on his model for some time, and has now got it to the point where he feels justified in taking out a patent. We trust his machine will be a success, and that he will be rewarded for his time and study.

Miss Andrews, one of the corps of teachers in our public schools has returned to her home in [illegible]. She will be missed from our town society during the

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owned by D. L. Faulk, followed some fellow who had the other end of the tie-rope and thus far has failed to return to his home. A reward of $50.00 is offered for the arrest and conviction of the thief.

Kingston Aerial Co.

For the purpose of manufacturing and selling flying machines, a charter has been issued to the Kingston Aerial Co., with $25,000 capitalization. The shops of the company are to be here. The incorporators of the company are G. W, Thompson, B. B. Steel, J. S. Vaughan, J. W. Little

Watch the Small Things.

Grand temples are built of small stones, and great lives are made up of trifling events.

Scripture r
1-12; John 14,
Violin Solo—
Comparison
to God's love,
The Lesson
Strange.
Practical Pc
Jones.
The Resurre
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The Risen Ch
sage, Helen W
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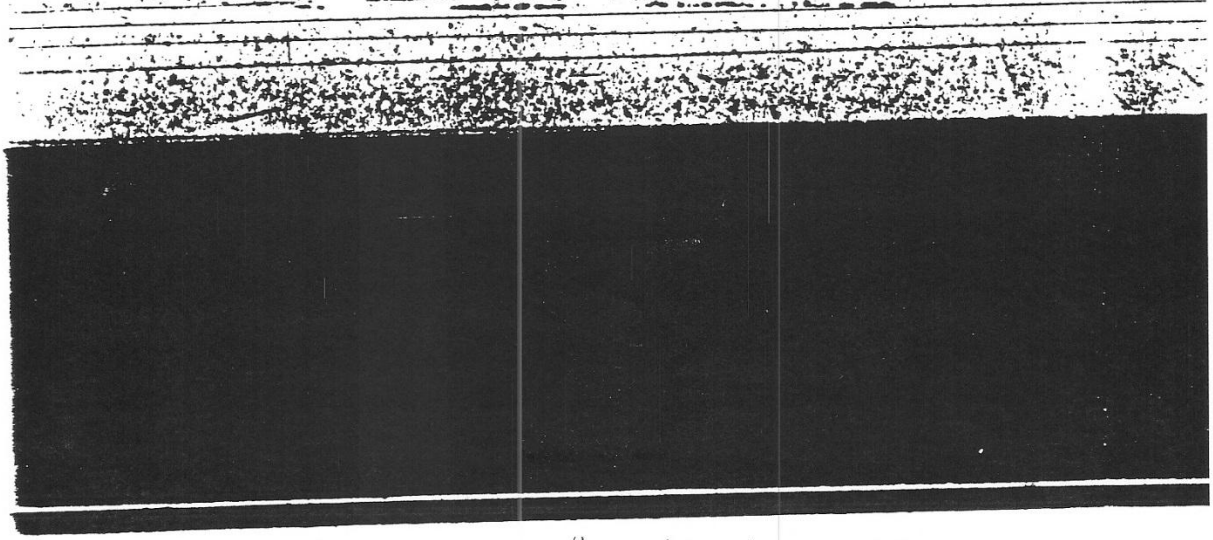

April 13, - 1912