June 9, 1964 D. A. CRANDALL 3,136,088

TOY JET AIRLINER

Filed Feb. 26, 1962

FIG. 1

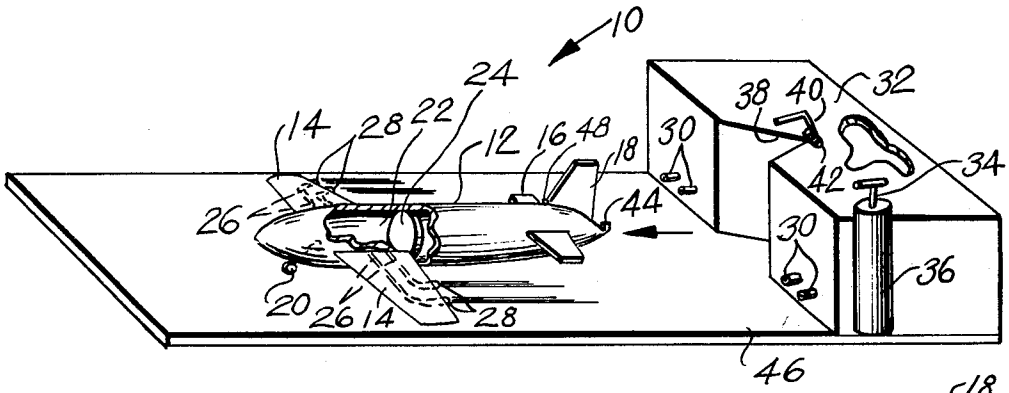


FIG. 2

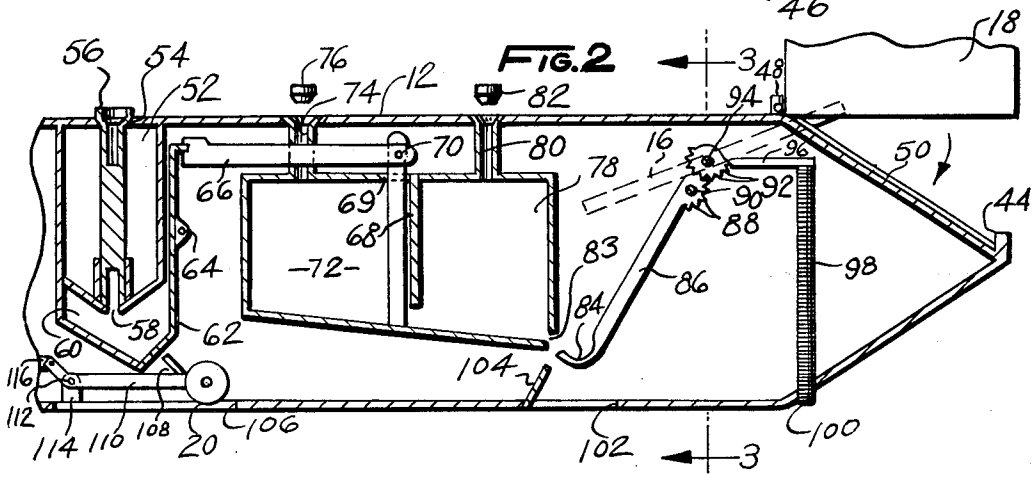


FIG. 3

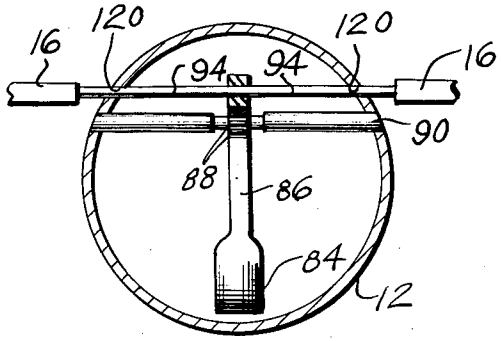
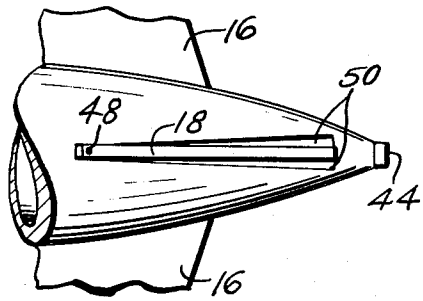


FIG. 4



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TOY JET AIRLINER

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This invention relates to flying toys, and more particularly, to gas-operated jet toys.

It is an object of the present invention to provide a toy jet airliner that will sustain itself in flight automatically by the shifting of organic matter therewithin.

Another object of the present invention is to provide a toy jet airlines that will be useful in teaching the principles of flight in heavier than air craft.

Another object of the invention is to provide a toy jet airliner that is amusing, recreational, and also useful in conveying the thought on the principle concerning reaction force that is a result of jet engines.

Still another object of the present invention is to provide a toy jet airliner that is controllable along its pitch axis by the shifting of sand or water from one compartment to a smaller compartment, giving mechanical rotation up or down to the aircraft's horizontal stabilizers.

Other objects of the invention are to provide a toy jet airliner, bearing the above objects in mind, which is of simple construction, has a minimum number of parts, is inexpensive to manufacture and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description, taken in conjunction with the accompanying drawing, in which:

FIGURE 1 is a perspective view, comprising the present invention, shown partly broken away;

FIGURE 2 is a fragmentary view of the aircraft, shown in section, and in elevation;

FIGURE 3 is a view taken on the lines 3—3 of FIGURE 2; and

FIGURE 4 is a fragmentary top plan view of the empennage of the aircraft.

Referring now more in detail to the drawing, a toy jet airliner **10**, made in accordance with the present invention, is shown to include an elongated hollow tubular fuselage **12**, a pair of tapered wings **14**, one on either side and in full cantilever with fuselage **12**. A rear empennage for controlling flight attitude consists of a pair of tapered horizontal stabilizers **16**, one on either side of the rear of fuselage **12**, and a vertical stabilizer **18**. A tricycle landing gear **20** supports the toy jet airliner **10**, and a compressed air chamber **22** is formed in the forward end of fuselage **12** by an electrical bolt head **24** behind the trailing edge of wings **14**, and a pair of hollow tubes **26** extend from compressed air chamber **22** therethrough each wing **14**, and extend rearwardly of the trailing edge forming jets **28**. A plurality of live rubber hollow jets **30** fit over jets **28**, in an air-tight manner from pressure tank **32**. A manually-operated handle, of T-shaped configuration, **34**, provides compression means of air in pump **36**, for filling pressure tank **32** with air, and a V-slot **38** receives therein the empennage of toy jet airliner **10**, and an L-shaped latch **40** is pivotable on hinge **42** above the pressure tank **32** at the apex of slot **38**, and receives in latching engagement therewith an upwardly-extending lip **44** of airliner **10**. A rectangular configurated run-way **46** is fixedly secured therebeneath pressure tank **42**, and extends forwardly thereof, providing run-way means for airliner **10**. A pivot pin **48** provides adjustment of vertical stabilizer **18** therewithin any one of a plurality of grooves **50**, providing any desired setting of turn-radius for airliner **10**, while in flight. A forward compartment **52** extends downward behind bolt head **24** therewithin fuselage **12**, and an opening, of circular configuration, **54**, receives sand or water, and an adjustment rod **56** is received therewithin the opening **54**, for adjusting the flow of sand therethrough opening **58** above the lower compartment **60**. An adjustable wall **62** pivotable on pin **64**, is secured to the forward end of rod **66**, and secured to movable wall **68**, by pins **70**, therewithin compartment **72**. An opening **74** in fuselage **12**, provides filling means for compartment **72**, and is capped by a plug **76**. Wall **68** is freely received therewithin upper slot **69** of compartment **72**. A rearward compartment **78** is secured to compartment **72**, and is filled with sand by opening **80**, which is capped by plug **82**, and the sand escaping from compartment **78** through opening **83** falls into pocket **84** of lever **86**. The upper end of lever **86** is provided with a plurality of rearwardly-projecing teeth **88**, and is pivotable on pin **90**, which is secured therewithin the fuselage **12**, and the teeth **88** are in toothing engagement therewith teeth **92** of shaft **94**, which is fixedly secured therebetween the horizontal stabilizers **16**. A horizontal latch **96** extends forward and in engagement with teeth **92**, provides securement means for stabilizer **16**, by the vertical coilspring **98**, which is fixedly secured therewithin opening **100** of fuselage **12**. An elongated opening **102** provides escapement of excess sand from the pocket **84** of lever **86**, and an upwardly and rearwardly-extending projection **104** forming a baffle prevents sand from going forward into fuselage **12**. An elongated and rectangular opening **106** provides lowering landing gear **20** therethrough, and a pocket **108** on landing gear strut **110**, receives sand from lower compartment **60**, and strut **110** is pivotable about pin **112**, which is received therethrough an upwardly-extending bracket **114**, and an angularly positioned off-set strut **116**, extends forward for simultaneous operation of the tricycle landing gear. Shaft **94** of horizontal stabilizer **16** is freely received therewithin opening **120** of fuselage **12**.

In operation, the airliner **10** is backed into the airport pressure tank **32** until the jets **28** are tightly received therewithin the rudder extension nozzles **30**, and latch **40** is pivoted down on hinge **42** until it is in latching engagement therewith the lip **44** of airliner **10**, thus, holding it steady. The T-shaped handle **34** of pump **36** is pushed down, in the well known manner, as often as it is necessary to build up the proper pressure in the tank **32**, and the air under pressure flows through nozzles **30** and thereinto the airliner compression chamber **22**. After the aforementioned is accomplished, a measured quantity of sand or water is then poured into the compartments **52**, **72**, and **78**, through the openings **54**, **74**, and **80**. The plugs **76**, and **82**, are then replaced, and latch **40** is pivoted upwardly out of engagement with the lip **44**, and the airliner **10**, thus, rolls forward by the principle of re-action, and when sufficient air speed is attained, it will rise, the horizontal stabilizers **16** being held at the proper angle by spring **98**. Simultaneously, sand is trickling from opening **83** of compartment **78** into pocket **84** of lever **86**, which will gradually rotate stabilizer **16**, until they are in position for level flying. Sand is also, simultaneously, flowing from opening **58** of compartment **52**, which is pre-adjusted by raising or lowering the rod **56**. When enough sand has been accumulated in compartment **60**, its weight urges wall **62** rearwardly, and in doing so, pivots wall **62** about pin **64**, and rod **66** is urged forwardly, and wall **68** is lifted, allowing sand to compartment **72** to trickle into compartment **78**, which will continue to increase the rate in pocket **84**, thus, causing stabilizers **16** to pivot even further, causing the airliner **10** to descend, and sand simultaneously tricking, from compartment **60**, into pocket **108**, will cause landing gear **20** to gradually descend to landing position. The vertical stabilizer is pre-adjusted before flight by pivoting upwardly with the

hand, and placing it down again into any one of a plurality of angularly-positioned grooves 50.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention, as defined by the appended claims.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A toy jet airliner of the class described and a launching base, comprising, in combination, a fuselage, an air compression chamber carried by said fuselage, a pair of wings mounted on said fuselage, a pair of horizontal stabilizers mounted on said fuselage, a vertical stabilizer mounted on said fuselage, a plurality of compartments contained therewithin said fuselage carrying a quantity of fine sand, said launching base for said airliner having a conventional air pressure pump, an air tank in said base, means for filling said air compression chamber in said airliner with air from said air tank in said base, said air tank being pumped by said conventional air pressure pump having air cylinder and piston means secured thereto said tank, and means to operate said horizontal stabilizers by the fine sand carried in said compartments, said fine sand trickling by gravity from said compartments to operate the aforesaid horizontal stabilizers as set forth.

2. The combination according to claim 1, wherein by means of the fine sand trickling by gravity from said compartments, the flight attitude along the pitch axis of said airliner is automatically controlled, said means operating said horizontal stabilizer comprising a lever hingeably held by one end to the fuselage of said airliner, a shaft in said fuselage, a gear on said shaft, said lever having a gear in mesh with the gear on said shaft, said horizontal stabilizer mounted to said shaft and being operated by said shaft when said shaft is operated by means of said hinging lever, said lever having a pocket in the opposite end thereof, said fine sand trickling from said compartments into said pocket, thus, increasing the weight of the sand trickle into said pocket to hinge said lever to operate said stabilizer by means of said gears meshing with one another, the operation upon said shaft gradually decreasing level flight attitude to a flight landing attitude of said airliner, said automatically controlled means operating independently of said air compression chamber in said airliner.

3. A combination, according to claim 2, wherein in said dual compartment said sand urging against said wall rearwardly of said forward compartment, trickles into an air pocket of substantially angular configuration formed in said wall on a landing gear strut of said airliner, thus, gradually lowering said landing gear through a substantially elongated slot therebeneath and therethrough said fuselage of said airliner, and said forward end of said landing strut being secured to a second forward and central landing gear strut, which is simultaneously operated said forward and central landing gear strut being secured to hinge in the forward section of the fuselage of said airliner.

4. A combination, according to claim 3, wherein said fuselage has a plurality of openings therethrough in the underside thereof, said openings allowing for the escape of said sand, and said fuselage having a rearward slot of substantially rectangular and elongated configuration having an upward and forwardly-located projection forming a baffle, said baffle being an integral part of the underside of said fuselage, said baffle preventing any sand from going forward thereof said pocket of said lever.

5. A combination, according to claim 4, wherein said first landing gear strut, above the first said elongated slot in said fuselage, is supported by vertically-extending bracket means therebehind the leading edge of said slot, and a pivot pin transverses said bracket means in said first landing gear strut.

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