

PatBase - Search results 22 July 2020

Search query (26): [SP]: method for supporting static test for light-aircraft fore fuselages the invention relates to an aircraft supporting-fixing method in static strength test, in particular to an aircraft-supporting method in static strength test for fore fuselages. the method for supporting static test for light-aircraft fore fuselages comprises that: a straight frame of an aircraft rear fuselage is provided with two clamp hoops the clamp hoops and the fuselage are tightly clamped each clamp hoop is connected with two upright columns arranged on two sides of the fuselage the width of a clamp-hoop edge strip is not greater than that of a fuselage edge strip where the clamp-hoop edge strip is arranged one clamp hoop is arranged on the fuselage straight frame between aircraft wings and an aircraft horizontal tail, and the other clamp hoop is arranged at the aircraft tail end after the aircraft horizontal tail is detached a longitudinal part is arranged on the fuselage between the two clamp hoops and the longitudinal part is a long truss on the fuselage. the method for supporting static test for light-aircraft fore fuselages has the advantage of effectively solving the problem of supporting the whole fore fuselage of a light aircraft in static strength test, along with simple operation, little influence on test results, high precision, low cost and great practical application value.

Results: 13**1) Family number: 30673019** (KR100415010B)

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Priority:

Family:

Probable Assignee:

Assignee(s):(std):

Assignee(s):

Inventor(s):(std):

International class

(IPC 8-9):

International class

(IPC 1-7):

CPC:

[Classification Explorer](#)

Forward Citations:

KR20020018297 20020403

Publication number	Publication date	Application number	Application date
 KR100415010 B1	20040113	KR20020018297	20020403
 KR20030079335 A	20031010	KR20020018297	20020403

KOREA AEROSPACE IND LTD

KOREA AEROSPACE IND LTD

KOREA AEROSPACE INDUSTRIES LTD

SHIN DONG HAK

G01G19/07 (Advanced/Invention);
G01G19/07 (Advanced/Non-invention);
G01G19/02 (Core/Invention)

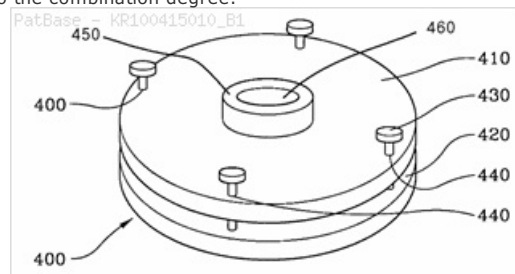
G01G19/07

G01G19/07

KR100937888, KR100855440, CN105444855, CN104390687, CN103723285, CN103723285, CN101788397,

Abstract:

PURPOSE: A leveler is provided to measure the weight and the center of gravity accurately, and to reduce measuring process by preventing measuring errors from side load with adjusting the load cell to the vertical shaft of an aircraft and correcting the weight by measuring the inclination angle. **CONSTITUTION:** A leveler is composed of an upper plate(420) supporting a load cell in the lower part of the load cell measuring the weight of an aircraft; a lower plate(410) placed in the lower part of the upper plate and supported by a shaft of a hydraulic cylinder; plural through holes vertically penetrating the upper plate and the lower plate; and plural assembling units connecting the upper plate and the lower plate with penetrating the through holes, and adjusting the inclination angle between the upper plate and the lower plate according to the combination degree.

**2) Family number: 53477089** (CN103010484A)

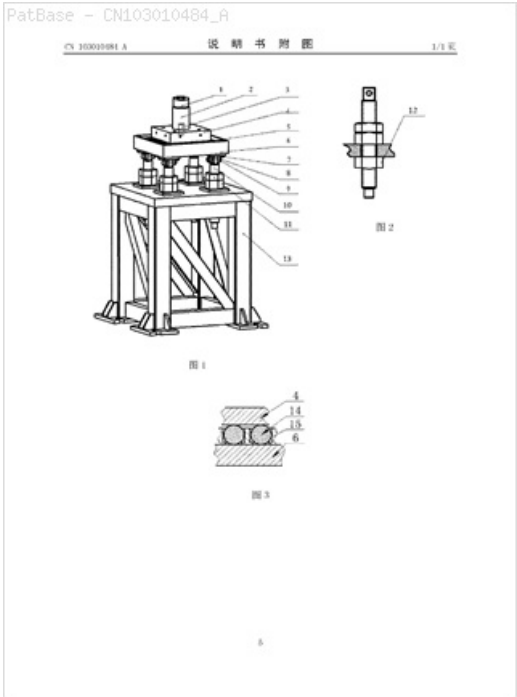
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Abstract:

The invention relates to a support device, in particular to a follow-up support device, which is used for airplane structure testing and can release the specific direction constraint. The follow-up support device comprises a special element, a force sensor, a connecting screw rod, a moving plate, a rolling ball device, a fixing plate, a double-lug fixing screw, double lugs, a hinging screw, a screw rod, an upper end regulating screw nut, a lower end regulating screw nut and an installing base. The follow-up support

device utilizes the plane rolling bearing application principle for realizing the follow-up support function of the support device, so the support device provides the vertical support function in the testing loading process, meanwhile, the support device can be prevented from generating the additional course and the lateral restraint, and the testing precision of the airplane structure is improved. Meanwhile, the follow-up support device adopts four groups of screw rod and screw nut mechanisms in symmetrical distribution for realizing the integral height and planeness regulation of the support device, the regulation mode is simple, in addition, a regulating mechanism has a self locking function, and the support reliability of the follow-up support device can be guaranteed.



3) Family number: 55527332 (CN203534842U) © PatBase

Title:

Priority:

Family:

Probable Assignee:

Assignee(s):(std):

Assignee(s):

Inventor(s):(std):

International class
IPC 8-9):

Classification Explorer

Cited documents:

Forward Citations:

MULTIFUNCTIONAL UNIVERSAL TEST BED FOR STATIC TEST ON LIGHT AIRPLANE

CN201310474550 20131011CN201320628492U 20131011

Publication number	Publication date	Application number	Application date
CN103487277 A	20140101	CN201310474550	20131011
CN103487277 B	20151104	CN201310474550	20131011
CN203534842 U	20140409	CN201320628492U	20131011

LIAONING GENERAL AVIAT ACADEMY

LIAONING GENERAL AVIAT ACADEMY ; SHENYANG AEROSPACE UNIV ; UNIV SHENYANG AEROSPACE

LIAONING GENERAL AVIATION ACADEMY

MA GANG ; GUO XIANGQUN ; YANG KANG ; GU CHAO

G01M99/00 (Advanced/Invention)

US2009179858 AA, KR100488257 B1, JP7295819 A2, CN203534842 U, CN1731124 A, CN101788397 A, CN110146265, CN106742052, CN105606357, CN105606357, CN105444999, CN105444999, CN103808505, CN103487277, CN103487277,

Abstract:
The utility model discloses a multifunctional universal test bed for a static test on a light airplane, and solves the problems that a conventional test bed for the static test on the light airplane is single in application, complex to operate and high in cost. The test bed consists of a main frame, a pulley block arranged on a pulley rack, and a movable tool, wherein the movable tool comprises a main horizontal tool, a front horizontal tool, a main vertical tool, an auxiliary tool A, an auxiliary tool B, an auxiliary tool C and an auxiliary tool D. The main horizontal tool is fixed with columns and is arranged on the main frame; the front horizontal tool is arranged on the side of the main frame; fixing pieces for fixing a machine head are arranged on the front horizontal tool; the main vertical tool is arranged on the main horizontal tool; the auxiliary tool A, the auxiliary tool B, the auxiliary tool C and the auxiliary tool D are arranged on the main vertical tool. The test bed mainly has the characteristics that the structure is reasonable and that the static test can be carried out on the airplane by moving the tools which are designed according to different models and sizes of the airplanes. The test bed also has the characteristics of wide application, low cost and convenient operation.

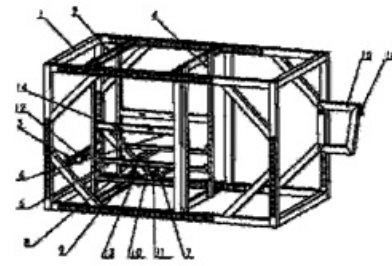


图 1

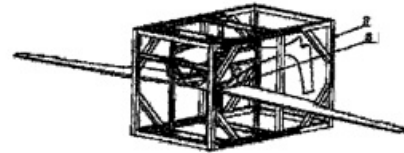


图 2

5

4) Family number: 53336395 (CN102991726A)

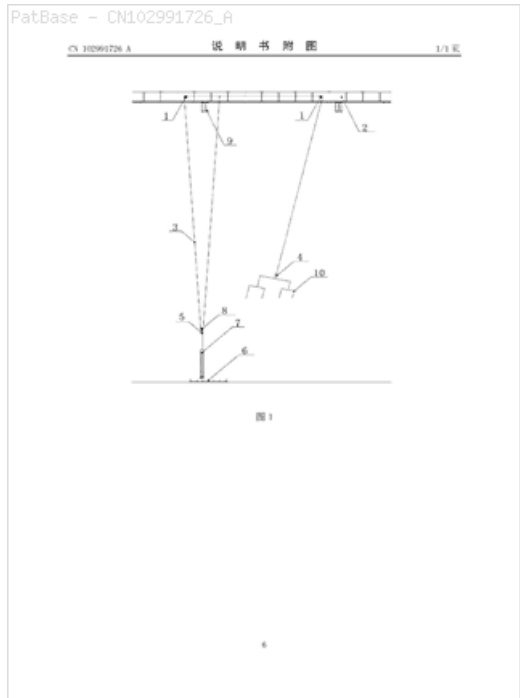
© PatBase

Title: LOADING SYSTEM AND METHOD FOR AIRPLANE STRUCTURE TEST**Priority:** CN201210528777 20121210**Family:**

Publication number	Publication date	Application number	Application date
■ CN102991726 A	20130327	CN201210528777	20121210

Probable Assignee: CHINA AIRPLANT STRENGTH RES INST**Assignee(s):(std):** CHINA AIRCRAFT STRENGTH RESEARCH INST ; CHINA AIRPLANT STRENGTH RES INST**Assignee(s):** CHINA AIRPLANT STRENGTH RESEARCH INST**Inventor(s):(std):** TIAN DONGZHENG ; WANG ZHENG ; XIA FENG ; ZHANG JIANFENG ; ZHANG WENWEN ; ZHAO LIMING ; ZHENG JIANJUN**International class (IPC 8-9):** B64F5/00 B64F5/60 (Advanced/Invention)[Classification Explorer](#)**Cited documents:** CN201013312 Y, CN102147342 A, CN101788397 A,**Forward Citations:** CN107655650, CN107499534, CN107499534, CN106501083, CN105571841, CN105571841, CN105416609, CN104865123, CN104865123, CN104386265, CN104048874, CN104002988, CN103994878, CN103926068, CN103926068, CN103776706, CN103776706,**Abstract:**

The invention belongs to an airplane testing technology and relates to a loading system and method for an airplane structure test. The loading system for the airplane structure test comprises a loading force-bearing system, a loading cross beam, a guide fixed pulley, a movable pulley set, a loading connecting member, a first force sensor, a second force sensor and a loading actuating cylinder, wherein the loading cross beam is arranged on the loading force-bearing system, the guide fixed pulley is fixed on the loading cross beam, the movable pulley set is arranged on the top end of the loading actuating cylinder, the loading actuating cylinder is fixed on a force-carrying terrace, and the loading connecting member surrounds the movable pulley set and the guide fixed pulley. According to the invention, a large-deformation part of a structure in an airplane structure static and fatigue test is loaded; by using a method for increasing a load by the actuating cylinder by the small-travel actuating cylinder, the retracting travel of a loading device is reduced; and under the condition of large deformation of the structure, the accuracy of deflection angle loading is ensured.



5) Family number: 46442417 (CN101788397A)

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Title: METHOD FOR SUPPORTING STATIC TEST FOR LIGHT-AIRCRAFT FORE FUSELAGES

Priority: CN201010114217 20100226

Family:

Publication number	Publication date	Application number	Application date
■ CN101788397 A	20100728	CN201010114217	20100226
■ CN101788397 B	20121010	CN201010114217	20100226

Probable Assignee: XI AN AIRCRAFT RES INST CHINA

Assignee(s):(std): XI AN AIRCRAFT DESIGN INST CHINA AVIAT IND CORP ; XI AN AIRCRAFT RES INST CHINA ; XI AN AIRCRAFT DESIGN INST OF CHINA AVIAT IND CORP

Assignee(s): XI AN AIRCRAFT RESEARCH INST CHINA AVIATIONINDUSTRY CORP ; XI AN AIRCRAFT DESIGN INST OF CHINA AVIATIONINDUSTRY CORP

Inventor(s):(std): ZHAOBIN ZHANG ; QUN SHAN ; HONGJUN HUI

Inventor(s): HUI HONGJUN ; ZHANG ZHAOBIN ; SHAN QUN

International class (IPC 8-9): B64F5/00 B64F5/60 G01M19/00 G01M99/00 (Advanced/Invention)

[Classification Explorer](#)

Cited documents: SU1601548 T, KR20030079335 A, CN1514213 A, CN1512149 A,

Forward Citations: CN107521721, CN107521721, CN104648689, CN104648689, CN103983463, CN103983463, CN103723285, CN103723285, CN103487277, CN103487277, CN103033378, CN103033378, CN103033351, CN103010484, CN102991726,

Abstract:

The invention relates to an aircraft supporting-fixing method in static strength test, in particular to an aircraft-supporting method in static strength test for fore fuselages. The method for supporting static test for light-aircraft fore fuselages comprises that: a straight frame of an aircraft rear fuselage is provided with two clamp hoops; the clamp hoops and the fuselage are tightly clamped; each clamp hoop is connected with two upright columns arranged on two sides of the fuselage; the width of a clamp-hoop edge strip is not greater than that of a fuselage edge strip where the clamp-hoop edge strip is arranged; one clamp hoop is arranged on the fuselage straight frame between aircraft wings and an aircraft horizontal tail, and the other clamp hoop is arranged at the aircraft tail end after the aircraft horizontal tail is detached; a longitudinal part is arranged on the fuselage between the two clamp hoops; and the longitudinal part is a long truss on the fuselage. The method for supporting static test for light-aircraft fore fuselages has the advantage of effectively solving the problem of supporting the whole fore fuselage of a light aircraft in static strength test, along with simple operation, little influence on test results, high precision, low cost and great practical application value.

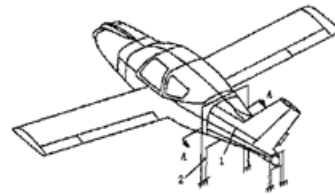
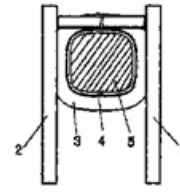


图 1



A-A

图 2

4

6) Family number: 59353607 (CN104648689A)

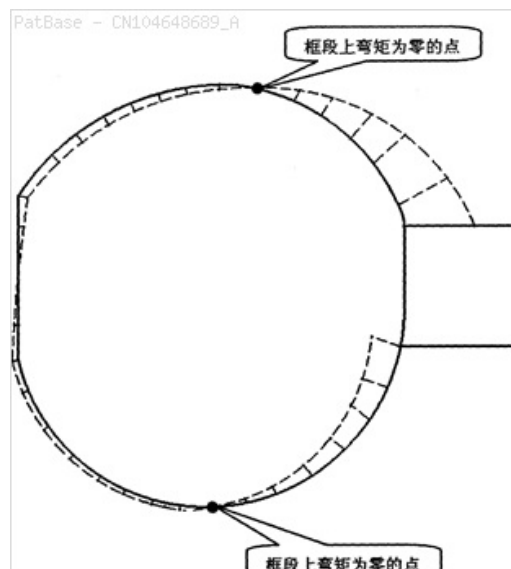
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Title: STATIC FORCE/FATIGUE TESTING METHOD APPLICABLE TO REINFORCING FRAME STRUCTURE**Priority:** CN201310754342 20131231**Family:**

Publication number	Publication date	Application number	Application date
■ CN104648689 A	20150527	CN201310754342	20131231
■ CN104648689 B	20160914	CN201310754342	20131231

Probable Assignee: SHENYANG AIRCRAFT DESIGN INST AVIAT IND CORP CHINA**Assignee(s):(std):** SHENYANG AIRCRAFT DESIGN AND RESEARCH INST OF AVIATION IND OF CHINA LTD CORP ; SHENYANG AIRCRAFT DESIGN INST AVIAT IND CORP CHINA**Assignee(s):** SHENYANG AIRCRAFT DESIGN INST AVIATION IND OF CHINA CORP**Inventor(s):(std):** XU PING ; WANG AO ; SUN XI ; LIU YAJUN**International class** B64F5/00 B64F5/60 (Advanced/Invention)
(IPC 8-9):[Classification Explorer](#)**Cited documents:** US2007227434 AA, SU1798654 A1, RU1798654 C, CN103407579 A, CN101788397 A,**Abstract:**

The invention belongs to the field of airplane designs and relates to improvement of a static force/fatigue testing method applicable to a reinforcing frame structure. The static force/fatigue testing method is characterized in that a frame section of a reinforcing frame with a concentrated bearing connector is used for carrying out a static force/fatigue test. The static force/fatigue testing method has the beneficial effects that a cabin section test for checking the reinforcing frame is converted into a frame section test, the scale of the test is reduced and the period of the test is shortened; the scale of the frame section test is smaller, so that the fatigue test dispersity can be sufficiently considered, the quantity of fatigue tests is increased, and the accuracy of a reinforcing frame fatigue test research is improved.



7) Family number: 56210687 (CN103723285A)

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Title: EMPENNAGE LOAD APPLYING DEVICE USED FOR PLANE STRUCTURE STRENGTH TESTS

Priority: CN201310652040 20131204

Family:

Publication number	Publication date	Application number	Application date
■ CN103723285 A	20140416	CN201310652040	20131204
■ CN103723285 B	20160120	CN201310652040	20131204

Probable Assignee: CHINA AIRPLANT STRENGTH RES INST

Assignee(s):(std): CHINA AIRCRAFT STRENGTH RESEARCH INST ; CHINA AIRPLANT STRENGTH RES INST

Assignee(s): CHINA AIRPLANT STRENGTH RESEARCH INST

Inventor(s):(std): CHAI JUN ; DU FENG ; KUANG HAIBO ; LI XIAOJUN ; WANG WEI ; ZHANG XINRUI

International class (IPC 8-9): B64F5/00 B64F5/60 (Advanced/Invention)

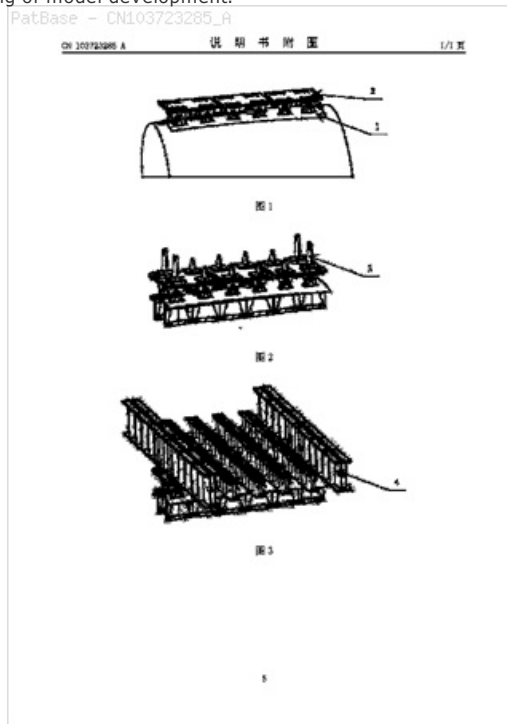
[Classification Explorer](#)

Cited documents: KR20030079335 A, JP2008094154 A2, CN202485908 U, CN202372399 U, CN201575950 U, CN103033351 A, CN102401764 A, CN101788397 A,

Forward Citations: CN109655245, CN109506908, CN107521721, CN107521721, CN106153319, CN106153319, CN104691780,

Abstract:

The invention provides an empennage load applying device which can effectively simulate the empennage stress condition under the state of the maneuvering flight of a plane in plane structure strength tests. The empennage load applying device comprises an empennage fake piece platform, connection lug pieces and loading cross beams, wherein different test loads are applied on a tested piece in the mode of changing the mode of the loading cross beams and the connection lug pieces perpendicular to the surface of the empennage fake piece platform. Reinforced bearing rib plates are arranged at the bottoms of the connection lug pieces at the large load area of the surface of the empennage fake piece platform so as to change the force transmission mode under the large loads, and reliability is increased. The empennage load applying device can truly simulate the transmission of the loads of empennages, meet the requirement of application of the loads of the empennages under different working conditions, and solve the problem that under the action of the large loads of the empennages, the empennage load applying device deforms along with a plane body; the empennage load applying device is convenient to install, saves installation space, shortens installation time, speeds up the test schedule, and can largely save funding of model development.



8) Family number: 68024764 (CN107521721A)

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Title: FULL SCALE FATIGUE TEST FUSELAGE COURSE LOAD LOADING DESIGN METHOD

Priority: CN201710596904 20170720

Family:

Publication number	Publication date	Application number	Application date
■ CN107521721 A	20171229	CN201710596904	20170720
■ CN107521721 B	20200707	CN201710596904	20170720

Probable Assignee: XIAN AIRCRAFT DESIGN INST AVIATION IND CORP CHINA

Assignee(s):(std): XIAN AIRCRAFT DESIGN INST AVIATION IND CORP CHINA ; XIAN AIRCRAFT DESIGN INST OF AVIATION IND OF CHINA CORP

Assignee(s): XI AN AIRCRAFT DESIGN INST OF AVIATION IND OF CHINA CORP ; CHINA AVIATION IND XI AN AIRCRAFT DESIGN INST CORP

Inventor(s):(std): MIN QIANG ; NING YU ; QIN JIANBO ; WANG YAFANG

International class (IPC 8-9): B64F5/60 (Advanced/Invention)

CPC: B64F5/60

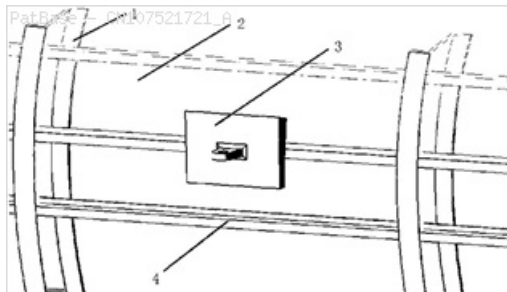
[Classification Explorer](#)

Cited documents: CN106153319 A, CN103723285 A, CN103625653 A, CN102680221 A, CN101788397 A,

Forward Citations: CN108839815, CN108839815,

Abstract:

The invention discloses a full scale fatigue test fuselage course load loading design method, and belongs to the field of aviation fatigue damage tolerance test. The full scale fatigue test fuselage course load loading design method comprises the following steps that firstly, a fuselage course total load in all working conditions is obtained; secondly, an airplane course loading scheme is determined, and a plurality of course loading connectors are mounted by adopting a mode of conjoint riveting with long crosspieces and skins or a mode of conjoint riveting with the long crosspieces, a fuselage frame and the skins; then connector load upper limits of the course loading connectors are calculated, a loading scheme of all the course loading connectors and a distribution load of all the course loading connectors are determined according to the course total load; durability of structure connecting in all the loading connectors is analyzed, and the strength of a weak part is improved; and finally, course load loading is conducted. According to the full scale fatigue test fuselage course load loading design method, the problems that a fuselage course load loading system is complete and difficult to design are solved.



9) Family number: 53509780 (CN103033351A)

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Title: BUNCHING TYPE HORIZONTAL LOADING FOLLOW-UP WEIGHT DEDUCTING DEVICE

Priority: CN201210528778 20121210

Family:

	Publication number	Publication date	Application number	Application date
■	CN103033351 A	20130410	CN201210528778	20121210
■	CN103033351 B	20151028	CN201210528778	20121210

Probable Assignee: CHINA AIRPLANT STRENGTH RES INST

Assignee(s):(std): CHINA AIRCRAFT STRENGTH RESEARCH INST ; CHINA AIRPLANT STRENGTH RES INST

Assignee(s): CHINA AIRPLANT STRENGTH RESEARCH INST

Inventor(s):(std): REN HONGYUN ; LEI DAOHONG ; DENG WENLIANG ; DU FENG ; HE YUEZHOU ; SONG PENGFEI

International class (IPC 8-9): G01M13/00 (Advanced/Invention)

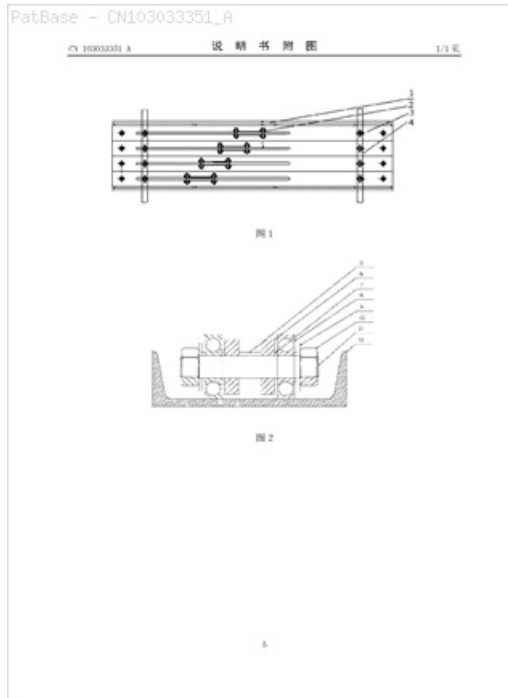
[Classification Explorer](#)

Cited documents: SU991212 A1, CN202485908 U, CN201765110 U, CN200978009 Y, CN1936146 A, CN101788397 A,

Forward Citations: CN107264836, CN107264836, CN104514840, CN104029826, CN104029826, CN103723285,

Abstract:

The invention belongs to a loading test follow-up weight deducting technology and relates to a bunching type horizontal loading follow-up weight deducting device used for an airplane structure strength test. The bunching type horizontal loading follow-up weight deducting device comprises sliding trolleys, trolley tracks and weight deducting connecting pieces. The sliding trolleys are arranged on the trolley tracks. One ends of the weight deducting connecting pieces are connected with a device which needs to be deducted weight and are connected on the sliding trolleys in an overlapped mode, and weight balancing blocks are arranged at the other ends of the weight deducting connecting pieces. According to the bunching type horizontal loading follow-up weight deducting device, the deducting of weights of a plurality of horizontal loading devices at the same time is achieved, deformation and follow-up following the test piece are achieved, weight deducting demands of one-piece or bunching devices are met, assembly according to demands can be achieved and a plurality of test demands are all considered. Due to the fact that the device is composed of channel steels and bearings, machining is fast, simple and convenient, installation technology is simple, practical applicability is strong, and cost is low.



10) Family number: 1647807 (CN1512149A)

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Title: ON-SITE CALIBRATING TEST METHOD AND ITS DEVICE FOR LANDING GEAR LOAD
Priority: CN20021058960 20021231

Family:	Publication number	Publication date	Application number	Application date
	■ CN1273814 C	20060906	CN20021058960	20021231
	■ CN1512149 A	20040714	CN20021058960	20021231

Probable Assignee: CN ACAD AGRICULTURAL MECH SCI

Assignee(s):(std): CN ACAD AGRICULTURAL MECH SCI ; CN AGRI MECH SCI RESEARCH INST

Assignee(s): CHINA AGRICULTURE MECHANIZATION SCIENCE INST ; CHINESE ACADEMY OF AGRICULTURAL MECHANIZATION SCIENCES

Inventor(s):(std): YAN CHULIANG ; MENG FANPEI ; ZHANG SHUMING ; YAN CHULIANG MENG

Inventor(s): CHULIANG MENG YAN ; CHULIANG YAN ; FANPEI MENG ; SHUMING ZHANG

International class
(IPC 8-9): G01G19/07 G01M5/00 (Advanced/Invention);
 G01G19/02 (Core/Invention)

International class
(IPC 1-7): G01G19/07

[Classification Explorer](#)

Forward Citations: CN109959491, CN107856889, CN107796578, CN106428623, CN105716886, CN105716886, CN105716842, CN103612772, CN103612772, CN103308295, CN102564555, CN102564555, CN102494908, CN102494073, CN101793547, CN101788397,

Abstract:

The present invention discloses on-site calibrating test method and device for landing gear load and is related to the safety and reliability of landing gear. The present invention features in-situ load application and calibration for landing gear under true and natural no-detachment condition to ensure the truth and precision of load calibration and measurement. The present invention solves the difficult problem of practically measuring and calibrating landing gear load of, especially, large airplane. The measured load spectrum data provides for the research and design of landing gear with important mechanical reference.

