

OVERHEAD LUGGAGE COMPARTMENT FOR AIRPLANES, AND AIRPLANE

The invention relates to an overhead luggage compartment for airplanes, comprising a stationary luggage compartment element
5 which can be secured to a structural element and comprising a movable luggage compartment element which can be loaded with a piece of luggage, said stationary luggage compartment element and the movable luggage compartment element being connected together by a joint such that the movable luggage compartment
10 element can be pivoted between an open position and a closed position, and comprising a device for holding the movable luggage compartment element in the open position.

Furthermore, the invention relates to an airplane comprising such an overhead luggage compartment.

15 Such overhead luggage compartments are known in the prior art and were described, for example, in the Austrian patent application A 50078/2013 which has not yet been published. Said luggage compartments were developed for larger passenger airplanes, which also have a larger ceiling height. For the
20 purpose of loading and unloading, the compartment is pivoted downwards into the open position. Such pivoting mechanisms usually include at least one spring element supporting the movement of the compartment against the gravitational force and into its closed position, and make it easier for the
25 passenger to close the loaded compartment.

In addition, the compartments comprise a device for holding the compartment in its open position, which according to the EP 1 436 194 may be formed by a spring-supported ball, which engages in a corresponding locking recess when the compartment
30 is in the open position. Thus, the compartment can be expediently held in its open position for loading and unloading, and therefore its handling may be facilitated. In this connection, the holding device must be positioned accordingly, and the spring force pressing the ball into the
35 locking recess must be at least large enough so that it will

not be overcome by the force of the spring element.

However, the known luggage compartments have the disadvantage of that the spring force of the holding device must be overcome independently of the load state. Disadvantageously, initiating the
40 closing operation requires a high operating force, if the pivotable luggage compartment is loaded with pieces of luggage.

Moreover, the prior art has already proposed different devices for determining the load state of the compartment, however, only with the aim of adjusting the support of the closing movement depending
45 on the load state.

The DE 41 30 644 A1, for example, shows an overhead luggage rack, whose operation requires only a minor operating force largely independent of the load and position of the movable compartment. For this purpose, the gas spring provided for supporting the closing
50 operation is arranged pivotally such that the pivot point on the upper lever and thus the torque acting on the upper lever and supporting the closing operation of the compartment are variable. The weight of the movable compartment of the overhead luggage compartment rack is detected by a weighing pin acting on a weighing
55 lever connected to the spring element. Depending on the weight of the load of the compartment, the gas spring is pivoted more or less and thus compensates the weight force of the compartment.

The DE 43 35 151 A1 likewise shows an overhead luggage compartment comprising a lowerable compartment, in which a further spring
60 element can be connected depending on the load of the compartment, to support the closing operation. In the event of no load or little load of the compartment a support lever connected to the additional spring element will be blocked such that the additional spring element does not exercise any additional force on the compartment.

65 If a loading of the compartment exceeds a certain threshold value which is detected by a weight-related deflection of the movable compartment, the blocking of the support lever can be released by an active pressure from below onto a release plate on the movable compartment part and the additional spring element acts to support
70 the closing operation. A Bowden cable is arranged between the release plate and the support lever for transmitting the pressure

onto the release plate on the blocking hook. Therefore, connecting the support spring requires the active help of the passenger.

The AT 410 536 B relates to a suspension device for lowerable

75luggage compartments. The compartment is connected to a stationary structural component via the suspension device, wherein the compartment can be lowered from a closing position into an open position. In this embodiment, a device for detecting the weight of the compartment is arranged on the compartment such that an

80additional spring element can be added depending on the detected weight of the compartment. The additional spring element is fixed by means of a retaining means in the form of a movable hook, until the compartment is loaded with pieces of luggage. Thereby, the compartment sinks downwards against the elastic force of a measuring
85spring, the hook being released by a Bowden cable, by means of which hook a sleeve of the spring element is retained. Thereby, in addition to a helical screw, the additional spring element can support the movement of the compartment to the closed position even when the latter is fully loaded.

90The AT 413 812 B likewise relates to a suspension device for lowerable luggage compartments. A shift gate is arranged on the sidewall of the lowerable compartment, which shift gate interacts with a shift lever of a spring element in the opened position of the luggage compartment, in order to effect switching of the spring

95element depending on the weight of the compartment. The shift gate is moved depending on the weight-related change of position of the compartment. In the event of an ordinarily loaded compartment, the latter is moved downwards against the force of a measuring spring. Thereby, the shift gate also carries out a corresponding movement

100such that the shift lever comes to rest on the shoulder of the shift gate which is located somewhat further below and thus causes a rotational movement of a disk connected to the shift lever. Thus, the spring element is released, which thus can exert its force during the closing operation. In the case of such ordinary loading
105of the compartment, only the larger spring element acts. In a fully loaded state of the compartment the shift lever comes to rest on the

bottommost shoulder of the shift gate such that the disk effects a further rotation of movement. Thus, both a sleeve of a further spring element and the spring element are released such that both
110spring elements can exert their force.

Further luggage compartments having devices for the weight-related support of the closing operation are described in DE 196 17 657 A1, EP 1 260 434 A1 and EP 1 436 194 B1.

In addition, further overhead luggage compartments are disclosed in
115DE 10 2006 045 189 A1, DE 10 2010 034 025 A1, US 2008/112754 A1 and DE 10 2011 110 406 A1.

On the other hand, the object of the present invention is to provide an overhead luggage compartment of the above cited type, by means of which the load state of the movable luggage compartment element for
120initiating the closing operation in the open position can be taken into consideration in a constructively simple, space-saving manner. Said object is achieved by an overhead luggage compartment, as is indicated in claim 1. Preferred embodiments are given in the depending claims.

125In accordance with the invention the device for holding the movable luggage compartment element in the open position comprises a force transmission element which is connected to the joint between the stationary luggage compartment element and the movable luggage compartment element, wherein in the open position of the movable
130luggage compartment element the joint can be moved depending on the load state of the movable luggage compartment element, wherein when the movable luggage compartment element is in the open position, the force transmission element is arranged in an active position in the unloaded state and in an inactive position in the loaded state by
135means of moving the joint, wherein in the active position of the force transmission element a holding torque is exerted which counteracts the pivot of the movable luggage compartment element from the open position in the direction of the closed position. Accordingly, the device according to the invention for holding the
140movable luggage compartment element in the open position is designed such as to detect the load state, that is the presence of a piece of

luggage in the movable luggage compartment element, in order to adjust the operating force for initiating the closing operation. In the unloaded state, it is necessary to apply a holding torque in
145 order to release the force transmission element moved into the active position. Compared to this, the force transmission element is inactive in the loaded state, thus facilitating closing of the luggage compartment. For this purpose, the invention provides an especially simple, reliable solution, in which the weight-related
150 movement of the joint in the open position is used for shifting the force transmission element between the active position and in the inactive position. In a preferred embodiment, the joint is provided on overlapping sections of sidewalls of the movable and stationary luggage compartment element. In the unloaded state, in the open
155 position of the movable luggage compartment element, the force transmission element is present in an upper, active position such that the holding torque must be overcome for closing the luggage compartment. Thus, any unintentional initiating of the closing operation can be prevented reliably. By loading the movable luggage
160 compartment element the joint is moved downwards such that the force transmission element connected thereto in the open position of the movable luggage compartment element is arranged in the lower, inactive position. The force transmission element is adapted such that in the inactive position a lower holding torque than in the
165 active position, preferably no holding torque is exerted on the movable luggage compartment element. Advantageously, in the loaded state, only the weight of the luggage compartment containing the piece of luggage has to be overcome, if one wants to move the luggage compartment from the open position in the direction of the
170 closed position. Thus, the operation of the luggage compartment can be designed to be particularly comfortable. Furthermore, it is of advantage that the arrangement of the force transmission element on the joint is possible by slightly adapting conventional luggage compartments. Accordingly, the device according to the invention for
175 determining the load state can be realized with little constructive effort. In addition, it is advantageous that the construction

according to the invention is especially space-saving. Therefore, it is favorable if the force transmission element is connected directly to the joint. Finally, it is favorable that only slight movements of
180 the joint as a function of the load state are sufficient already to activate or deactivate the device for holding the movable luggage compartment element in the open position.

To make use of the weight of the piece of luggage in a constructively simple manner for transferring the force transmission
185 element between the active and inactive positions, it is favorable if the force transmission element can be moved between the active position and the inactive position essentially in the vertical direction, depending on the load state. Accordingly, the weight of the piece of luggage leads to a lowering of the joint between the
190 movable and the stationary luggage compartment elements, whereby lowering of the joint is converted into a vertical movement of the force transmission element between the active position and the inactive position. When the force transmission element is in the active position, a holding torque is produced which counteracts the
195 pivot of the movable luggage compartment element in the direction of the closed position.

To reliably arrest the movable luggage compartment element in the open position, it is of advantage if the stationary luggage compartment element comprises a contact element, which in the active
200 position engages with the force transmission element, wherein in the inactive position of the force transmission element the engagement between the force transmission element and the contact element is released. Accordingly, the force transmission element, which is coupled to the joint between the movable and the stationary luggage
205 compartment elements, interacts with the contact element which is provided on the stationary luggage compartment element. In the active position, the force transmission element and the contact element are connected to each other in a frictional and/or positive engagement. Therefore, in the unloaded state of the luggage
210 compartment, it is necessary for closing the luggage compartment to overcome the frictional and/or positive engagements between the

force transmission element and the contact element by applying the holding torque. Compared to this, in the loaded state of the luggage compartment, the force transmission element is arranged in the
215inactive position in which a lower or no holding torque is generated.

To provide the holding torque for the unloaded state of the luggage compartment which counteracts the pivot of the luggage compartment from the open position into the closed position, preferably at least
220one spring element for biasing the force transmission element in the direction of the active position is provided. Therefore, if no piece of luggage is available, the holding device is active in the open position of the movable luggage compartment element. On the other hand, due to the arrangement of a piece of luggage, the joint is

225lowered together with the force transmission element such that the force transmission element is arranged in the inactive position.

Therefore, upon closing the luggage compartment in the loaded state a lower or no holding torque of the holding device must be overcome. To increase the ease of use it is advantageous to provide a lifting
230spring between the movable luggage compartment element and the stationary luggage compartment element, with which lifting spring the pivot of the movable luggage compartment element from the open position into the closed position is supported.

Accordingly, the lifting spring acts in the direction of the closed
235position of the luggage compartment. In addition, a dampening element may be provided, which dampens the movement of the movable luggage compartment element downwards such that the movable luggage compartment element does not fall downwards abruptly upon opening. Such lifting springs or dampening elements have been used already

240for luggage compartments with pivotable luggage compartment elements. However, what is advantageous is the use in connection with the force transmission element according to the invention, which in the open position of the movable luggage compartment element is arranged in an active or in an inactive position,
245depending on the load state. The pivot movement of the movable luggage compartment element can be supported by the lifting spring,

as soon as the closing operation, depending on the load state, has been initiated by overcoming the holding torque. For example, a gas spring can be used as a lifting spring, which also assumes the
250 function of a dampening element. Preferably, two lifting springs are provided per luggage compartment, which engage on opposite sidewalls of the movable and the stationary luggage compartment elements. To use the pivot movement of the movable luggage compartment element to arrange the force transmission element in the active position, it
255 is advantageous if the force transmission element is connected in a torque-proof manner to the joint between the movable luggage compartment element and the stationary luggage compartment element such that the force transmission element can be pivoted by pivoting the movable luggage compartment element. Advantageously, the
260 suspension of the movable luggage compartment element can be designed in an especially simple manner if the force transmission element is connected directly to the joint. Accordingly, the force transmission element is pivoted together with the joint. In the unloaded state of the luggage compartment, the force transmission
265 element is preferably arranged exactly in the active position when the movable luggage compartment element reaches the open position. In this embodiment, transferring the force transmission element into the active position is coupled to reaching the open position of the movable luggage compartment element.

270 According to a preferred embodiment, the force transmission element and the contact element comprise corresponding locking elements, wherein in the open position of the movable luggage compartment element the locking elements are arranged in a locked position or in a release position, depending on the load state. In the unloaded
275 state, the corresponding locking elements are locked with each other when the movable luggage compartment element reaches the open position. By overcoming the holding torque the locking connection is released upon closing of the luggage compartment. On the other hand, the locking elements remain inactive in the loaded state of the
280 luggage compartment. This embodiment has the advantage that the force transmission element can be arranged in the active position

only when the movable luggage compartment element is in the open position. Accordingly, in this embodiment a holding torque which counteracts the pivot of the movable luggage compartment element is
285 provided only in the open position, which holding torque must be applied by the user to initiate the closing operation. As soon as the force transmission element has been moved into the release position at the beginning of the closing operation, the further pivot of the movable luggage compartment element can be accomplished
290 without overcoming a torque produced by the holding device.

To generate the holding torque which counteracts the initiation of the closing operation it is favorable if the locking element of the contact element is connected to a holding spring such that the locking element of the contact element can be moved against the
295 force of the holding spring in the direction of the release position. The holding torque which counteracts the pivot thus results from the force effect of the holding spring and the lifting arm, which is formed between the locking element of the contact element and a grip element that can be gripped by a user.

300 As regards a space-saving, constructionally simple embodiment, it is advantageous if the locking element of the force transmission element is designed as a locking disk which comprises a locking projection to lock with the locking element of the contact element. The locking disk of the force transmission element is preferably

305 connected to the joint between the movable and the stationary luggage compartment elements in a torque-proof manner. Accordingly, the locking disk can be turned by pivoting the movable luggage compartment element, wherein the locking projection of the locking disk is locked in the unloaded state with the corresponding locking

310 element on the stationary luggage compartment element, as soon as the movable luggage compartment element reaches the open position. In the loaded state of the luggage compartment, the joint, together with the force transmission element, is arranged in a lowered inactive position such that the locking projection of the force
315 transmission element does not come into contact with the locking element on the stationary luggage compartment element.

What is particularly reliable is an embodiment in which the locking element of the contact element is formed by a spring lock which can be moved between the locked position and the release position by
320 means of the locking element of the force transmission element. The spring lock is preferably supported in movable manner in an essentially radial direction, related to the joint between the stationary and the movable luggage compartment elements. When the locking element of the force transmission element impinges upon the
325 free end of the spring lock, the spring lock is moved into the release position against the spring force. To unlock the locking elements the user must overcome the holding torque.

According to an alternative preferred embodiment the locking element of the contact element is formed by a spring-loaded ball element,
330 which when the movable luggage compartment element is in the open position, in the unloaded state is arranged within a corresponding locking recess of the locking element of the force transmission element and in the loaded state outside the locking recess of the locking element of the force transmission element. In this
335 embodiment the force transmission element preferably comprises a pivotable locking element connected to the joint in a torque-proof manner. The spring-loaded ball element can be actuated by pivoting the force transmission element. Upon reaching the open position of the movable luggage compartment element the spring-loaded ball
340 element at least partially snaps in place in the locking recess of the locking element of the force transmission element, if the force transmission element is arranged in the upper, active position in the unloaded state of the luggage compartment. Upon closing of the luggage compartment the ball element can be pressed out of the
345 locking recess of the pivotable locking element against the force of the spring. Releasing the ball element therefore requires a force which causes the holding torque in the open position of the movable luggage compartment element. Upon pivoting into the open position the ball element can slide on the surface of the force transmission
350 element.

In this embodiment it is also favorable if the spring element for biasing the force transmission element in the direction of the active position comprises at least one further spring-loaded ball element, preferably two spring-loaded ball elements. The at least
355 one further spring-loaded ball element for biasing the force transmission element on the one hand and the spring-loaded ball element for locking of the movable luggage compartment element in the open position on the other side are preferably arranged on opposite sides of the force transmission element. If the weight of
360 the piece of luggage in the movable luggage compartment element exceeds a predetermined value, the force transmission element is lowered against the force of the at least one further spring-loaded ball element into the active position such that the locking elements in the open position of the movable luggage compartment element are
365 arranged in the release position. In this case, the closing operation can be initiated without applying the holding torque. According to a further preferred embodiment the force transmission element comprises a frictional surface, with which a frictional force depending on the load state of the movable luggage compartment
370 element can be transferred onto a corresponding frictional surface of the contact element. In the active position of the force transmission element a higher frictional force is transferred to the contact element than in the inactive position of the force transmission element, since the frictional force decisively depends
375 on the normal force between the frictional surfaces, which is influenced by the weight-related position of the force transmission element. In the loaded state, the frictional surfaces can be arranged at a distance to one another at least in the open position of the luggage compartment such that the friction between the
380 frictional surfaces disappears completely. Depending on the design, a frictional force may exist between the frictional surfaces in the loaded state, which however is smaller than in the unloaded state. To manage the weight-related adjustment of the holding torque in the open position with as little adjustments as possible on the
385 suspension of the movable luggage compartment element, it is

advantageous if the frictional surface is provided on the circumference of the force transmission element jointly pivotable with the movable luggage compartment element. In this embodiment, the contact element may have a corresponding frictional surface, on 390 which the frictional surface of the force transmission element slides upon closing the luggage compartment.

To increase the friction between the frictional surfaces in the unloaded state of the luggage compartment, it is favorable if the frictional surface on the force transmission element and/or on the 395 contact element comprises an anti-slip material.

According to a particularly preferred embodiment it is provided that the force transmission element is supported such that the joint between the stationary luggage compartment element and the moveable luggage compartment element is lifted in the loaded state during the 400 closing operation. In this embodiment the force transmission element, which is preferably designed so as to comprise a locking element, is supported with respect to the stationary luggage compartment element such that the joint is lifted upon closing of the loaded luggage compartment. Accordingly, the joint in the open 405 position is lowered by loading the piece of luggage, whereby the locking elements are arranged in the inactive position. Upon closing, the joint is lifted by the support of the force transmission element. Advantageously, it may be ensured in a reliable manner that the luggage compartment is arranged in the 410 closed position in a gap-free manner.

For this purpose it is provided in a first preferred variant of embodiment that the force transmission element is designed as a cam element having a non-circular support surface. In the open position of the loaded luggage compartment the cam-shaped force transmission 415 element is arranged in a lying position. Upon closing of the luggage compartment, the cam-shaped force transmission element is transferred into an upright position, whereby the joint between the movable and the stationary luggage compartment element is lifted accordingly by being supported on the stationary luggage compartment 420 element. In particular, the force transmission element can have an

oval support surface which is supported on a round support surface of the stationary luggage compartment element.

According to an alternative variant of the embodiment it is provided that the force transmission element is connected to a stop, by means
425 of which the force transmission element can be lifted together with the joint upon reaching the closed position. The joint is lifted by this stop, when the loaded luggage compartment reaches the closed position. Thereby, it can be prevented that a gap is formed in the closed position despite loading.

430 Below, the invention will be further illustrated on the basis of preferred exemplary embodiments, to which the invention shall not be limited. In detail, the following is shown in the drawing:

Fig. 1 shows a schematic view of an overhead luggage compartment for airplanes, wherein a movable luggage compartment element is

435 pivotally supported on a stationary luggage compartment element by means of joints;

Figs. 2, 3 show an embodiment according to the invention of the overhead luggage compartment, in which the joints are coupled to the force transmission elements, which in the open position of the

440 movable luggage compartment element exert a holding torque depending on the load state on the movable luggage compartment element by means of frictional surfaces sliding on one another, wherein in Fig. 2 the luggage compartment is shown in the unloaded state and in Fig. 3 it is shown in the loaded state;

445 Fig. 4 shows a further embodiment according to the invention of the overhead luggage compartment in various positions, whereby the joints between the movable and the stationary luggage compartment elements are connected to locking elements, which in the unloaded state are locked in the open position of the movable luggage

450 compartment element (cf. Fig. 4c) such that upon pivoting in the direction of the closed position (cf. Fig. 4f) the holding torque must be overcome, the locking elements in the loaded state being present in an unlocked state (cf. Fig. 4d);

Figs. 5 to 7 show a variation of the embodiment according to Fig. 4
455 comprising a ball element as locking element, wherein Fig. 5 shows

the locked state in the unloaded open position of the luggage compartment, Fig. 7 shows the non-locked state in the loaded open position of the luggage compartment and Fig. 6 shows a position during the closing of the luggage compartment; and

460 Fig. 8 shows a further embodiment according to the invention, with an alternative design of the locking elements which in the unloaded state of the movable luggage compartment element are locked and in the loaded state are released.

Fig. 1 shows an overhead luggage compartment 1 for airplanes,
465 comprising in the shown embodiment two identically designed luggage compartment modules 1'. Of course, only one such luggage compartment module 1' or more than two such luggage compartment modules 1' may be provided. The luggage compartment modules 1' each comprise a stationary luggage compartment element 2, which can be connected to
470 a structural element, in particular to an aircraft fuselage (not shown). Moreover, the luggage compartment 1 comprises a movable luggage compartment element 3 which may be designed as a trough, semi-chute or U-shaped luggage compartment to accommodate pieces of luggage. The movable luggage compartment element 3 is suspended on
475 the stationary luggage compartment element 2 on both sides by means of joints 4 having joint axes 4'. The joints 4 are located on overlapping sections of sidewalls 5 of the movable luggage compartment element 3 and sidewalls 6 of the stationary luggage compartment element 2. The movable luggage compartment element 2 can
480 be pivoted between an open position (cf. the left luggage compartment module 1' in Fig. 1), in which a load opening 7 is released, and a closed position (cf. the right luggage compartment module 1' in Fig. 1), in which the load opening 7 is closed. For this purpose, the movable luggage compartment element 3 comprises a
485 grip element 8 on the visible side, with which the luggage compartment 1 can be opened or closed. Furthermore, Fig. 1 shows lifting springs 9 between the movable luggage compartment element 3 and the stationary luggage compartment element 2, with which the pivot of the movable luggage compartment element 3 from the open

490 position into the closed position is supported. The spring element is preferably connected to a damping element (not shown).

As can be seen from Figs. 2, 3 the luggage compartment 1 additionally comprises a device 10 for holding the movable luggage compartment element 3 in the open position, which is designed to 495 detect a load state of the movable luggage compartment element 3. In the shown embodiment, the device 10 comprises a force transmission element 11, which is connected to the joint 4 between the stationary luggage compartment element 2 and the movable luggage compartment element 3. Of course, both opposite joints 4 of the luggage

500 compartment 1 may be designed identically. When the movable luggage compartment element is in the open position (cf. Fig. 2), the joint 4 can be moved depending on the load state of the movable luggage compartment element 3 in a vertical direction. Fig. 3 schematically shows a piece of luggage having a weight 12 generating a force in 505 the direction of arrow 13. Due to the weight-dependent movement of the joint 4 the force transmission element 11 is arranged in an active position in the unloaded state (cf. Fig. 2) and in an inactive position in the loaded state (cf. Fig. 3). In the active position of the force transmission element 11, a holding torque is

510 exerted which counteracts the pivot of the movable luggage compartment element 3 from the open position in the direction of the closed position such that the movable luggage compartment element 3 is held in the open position. For this purpose, the stationary luggage compartment element 2 comprises a contact element 14, which 515 in the active position engages the force transmission element 11, whereas in the inactive position of the force transmission element 11 the engagement between the force transmission element 11 and the contact element 14 is released.

According to Figs. 2, 3 the force transmission element 11 comprises 520 a frictional surface 15, with which a frictional force depending on the load state of the movable luggage compartment element 3 can be transferred onto a corresponding frictional surface 15' of the contact element. In the shown embodiment, the frictional surface 15 is provided on the circumference of the force transmission element

52511, which is connected to the joint 4 in a torque-proof manner.

Accordingly, the force transmission element 11 is pivoted together with the movable luggage compartment element 3 upon closing of the luggage compartment 1. In the unloaded state of the luggage compartment 1 (cf. Fig. 2), a frictional torque is generated by the
530friction between the frictional surfaces 15, 15', which is overcome by the user upon closing of the luggage compartment 1. To adjust a suitable holding or frictional torque, the frictional surface 15 on the force transmission element 11 and/or the frictional surface 15' on the contact element 14 may comprise an anti-slip material.

535As may be further seen from Figs. 2, 3, at least one spring element 16 for biasing the force transmission element 11 in the direction of the active position is provided. By loading the movable luggage compartment element 3 with the piece of luggage, cf. weight 12 in Fig. 3, the force transmission element 11 can be moved against the
540force of the spring element 16 essentially in a vertical direction downwards and into the inactive position. Thus, the frictional surfaces 15, 15' are arranged at a distance such that the frictional or holding torque of the holding device 10 disappears in the open position of the movable luggage compartment element 3.

545Fig. 4 shows an alternative embodiment of the force transmission element 11, the suspension of the joint 4 on the luggage compartment 1 being shown only schematically for better overview. In Fig. 4a to Fig. 4c the opening operation of the luggage compartment is shown in the unloaded state, Fig. 4a showing the closed position, Fig. 4b
550showing an intermediate position and Fig. 4c showing an open position. Figs. 4d to 4f illustrate the closing operation of the loaded luggage compartment, Fig. 4d showing the open position, Fig. 4e showing the intermediate position and Fig. 4f showing the closed position.

555As can be seen from Fig. 4, in this embodiment the force transmission element 11 is also connected to the joint 4 between the movable luggage compartment element 3 and the stationary luggage compartment element 2 in a torque-proof manner such that the force

transmission element 11 can be pivoted by pivoting the movable
560luggage compartment element 3.

According to Fig. 4 the force transmission element 11 comprises a locking element 18 in the form of a locking recess 22, which interacts with a corresponding, bar-shaped locking element 19 of the contact element 14. Depending on the load state, in the open
565position of the movable luggage compartment element 3, the locking elements 18, 19 are arranged in a locked position (cf. Fig. 4c) or in a release position (cf. Fig. 4d). The locking element 19 of the contact element 14 is connected to a holding spring 20 such that the locking element 19 of the contact element 14 can be moved against
570the force of the holding spring 20 from the locked position (cf. Fig. 4c) in the direction of the release position (cf. Fig. 4b) in the unloaded state of the luggage compartment 1.

In addition, Fig. 4 schematically shows a stop 26, with which the movement of the locking element 19 is limited. In addition, a stop
57527 is schematically shown, by which it is ensured that in the loaded state, upon reaching the closed position of the luggage compartment 1, the joint axis 4' is lifted to a position in which the luggage compartment 1 is closed in a gap-free manner.

According to Figs. 5 to 7 the locking element 19 of the contact
580element 14 is formed by a ball element 21 loaded by the spring element 20, with which ball element 21 a locking recess 22 of the force transmission element 11 interacts. Of course, the locking recess 22 may be provided alternatively on the locking element 19 and the ball element 21 on the force transmission element 11. In the
585open position of the movable luggage compartment element 3, the ball element 21 is partially arranged within the locking recess 22 of the locking element 18 of the force transmission element 11, if in the unloaded state of the luggage compartment 1 the force transmission element 11 is in the upper, active position. In the loaded state,
590the ball element 21 is arranged outside the locking recess 22 of the locking element 18 of the force transmission element 11. Upon closing the luggage compartment 1, the force transmission element 11

is pivoted in the direction of arrow 17 (cf. Fig. 6), the locking elements 18, 19 being released from their locking engagement.

595As can be further seen from Figs. 5 to 7, for biasing the force transmission element 11 in the direction of the active position, the spring element 16 comprises two further spring-loaded ball elements 23 in this embodiment, which roll on the corresponding support surface of the force transmission element 11. In the shown
600embodiment, the force transmission element 11 with the locking element 18 is designed as a cam element having a non-round, e.g. oval support surface. This causes the joint axis 4' to be lifted to the initial position prior to loading during the closing operation in the loaded state. Thus, the luggage compartment is arranged in
605the closed position in a gap-free manner.

According to Fig. 8 the locking element 18 of the force transmission element 11 is designed as a locking disk connected to the joint 4 in a torque-proof manner which locking disk comprises a locking projection 24 for locking with the locking element 19 of the contact
610element 14. In the shown embodiment, the locking element 19 of the contact element 14 is formed by a spring bar 25 with a bar element 25' and a spring element 25". The spring bar 25 can be moved by the locking element 18 of the force transmission element 11 between the locked position (cf. Fig. 7) and the release position (not shown) in
615that the movable luggage compartment element 3 is pivoted from the open position in the direction of the closed position.

Claims:

1. An overhead luggage compartment (1) for airplanes,
comprising a stationary luggage compartment element (2)
which can be secured to a structural element and
5 comprising a movable luggage compartment element (3)
which can be loaded with a piece of luggage, the
stationary luggage compartment element (2) and the
movable luggage compartment element (3) being connected
together by a joint (4) having a joint axis (4') such
10 that the movable luggage compartment element (3) can be
pivoted between an open position and a closed position,
and comprising a device (10) for holding the movable
luggage compartment element (3) in the open position,
characterized in that the device (10) for holding the
15 movable luggage compartment element (3) in the open
position comprises a force transmission element (11)
which is connected to the joint (4) between the
stationary luggage compartment element (2) and the
movable luggage compartment element (3), wherein in the
20 open position of the movable luggage compartment element
(3) the joint (4) being movable depending on the load
state of the movable luggage compartment element (3), by
loading the movable luggage compartment element (3),
wherein when the movable luggage compartment element (3)
25 is in the open position, the force transmission element
(11) is arranged in an active position in the unloaded
state and in an inactive position in the loaded state by
means of a movement of the joint (4), wherein the
stationary luggage compartment element (2) comprises a
30 contact element (14) which in the active position is
engaged with the force transmission element (11),
wherein in the inactive position of the force
transmission element (11) the engagement between the
force transmission element (11) and the contact element

35 (14) is released, the force transmission element (11)
 being adapted such that in the inactive position of the
 force transmission element (11) a holding torque is
 exerted that counteracts the pivot of the movable
 luggage compartment element (3) from the open position
 40 in the direction of the closed position, which holding
 torque is lower than in the active position of the force
 transmission element (11).

2. The overhead luggage compartment (1) according to claim
 45 1, **characterized in that** the force transmission element
 (11) can be moved essentially in the vertical direction
 between the active position and the inactive position,
 depending on the load state, related to a state of the
 overhead luggage compartment (1) attached to a fuselage.

50 3. The overhead luggage compartment (1) according to claim
 1 or 2, **characterized in that** at least one spring
 element (16) for biasing the force transmission element
 (11) in the direction of the active position is
 55 provided.

4. The overhead luggage compartment (1) according to one of
 claims 1 to 3, **characterized in that** a lifting spring
 (9) is provided between the movable luggage compartment
 60 element (3) and the stationary luggage compartment element
 (2), by means of which lifting spring (9) the pivot of
 the movable luggage compartment element (3) from the
 open position into the closed position is supported.

65 5. The overhead luggage compartment (1) according to one of
 claims 1 to 4, **characterized in that** the force
 transmission element (11) is connected to the joint (4)
 between the movable luggage compartment element (3) and
 the stationary luggage compartment element (2) in a

- 70 torque-proof manner such that the force transmission
element (11) can be pivoted by pivoting the movable
luggage compartment element (3).
6. The overhead luggage compartment (1) according to one of
75 claims 1 to 5, **characterized in that** the force
transmission element (11) and the contact element (14)
comprise corresponding locking elements (18, 19),
wherein the locking elements (18, 19) are arranged in a
locked position or a release position in the open
80 position of the movable luggage compartment element (3),
depending on the load state.
7. The overhead luggage compartment (1) according to claim
6, **characterized in that** the locking element (19) of the
85 contact element (14) is connected to a holding spring
(20), such that the locking element (19) of the contact
element (14) can be moved against the force of the
holding spring (20) in the direction of the release
position.
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8. The overhead luggage compartment (1) according to claim
6 or 7, **characterized in that** locking element (18) of
the force transmission element (11) is designed as a
locking disk comprising a locking projection (24) for
95 locking with the locking element (19) of the contact
element (14).
9. The overhead luggage compartment (1) according to one of
claims 6 to 8, **characterized in that** the locking element
100 (19) of the contact element (14) is formed by a spring
lock (25) which can be moved by the locking element (18)
of the force transmission element (11) between the
locked position and release position.

10510. The overhead luggage compartment (1) according to claim
6 or 7, **characterized in that** the locking element (19)
of the contact element (14) is formed by a spring-loaded
ball element (21), which when the movable luggage
compartment element (3) is in the open position, in the
110 unloaded state is arranged within a corresponding
locking recess (22) of the locking element (18) of the
force transmission element (11) and in the loaded state
is arranged outside the locking recess (22) of the
locking element (18) of the force transmission element
115 (11).

11. The overhead luggage compartment (1) according to claim
10, **characterized in that** for biasing the force
transmission element (11) in the direction of the active
120 position, the spring element (16) comprises at least one
further spring-loaded ball element (23), preferably two
spring-loaded ball elements (23).

12. The overhead luggage compartment (1) according to one of
125 claims 1 to 5, **characterized in that** the force
transmission element (11) comprises a frictional surface
(15), with which a frictional force depending on the
load state of the movable luggage compartment element
(3) can be transferred onto a corresponding frictional
130 surface (15') of the contact element (14), preferably
the frictional surface (15, 15') on the force
transmission element (11) and/or on the contact element
(14) comprising an anti-slip material.

13513. The overhead luggage compartment (1) according to claim
12, **characterized in that** the frictional surface (15) is
provided on the periphery of the force transmission
element (11) jointly pivotable with the movable luggage
compartment element (3).

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14. The overhead luggage compartment (1) according to one of claims 1 to 13, **characterized in that** the force transmission element (11) is supported such that the joint (4) between the stationary luggage compartment element (2) and the movable luggage compartment element (3) is lifted in the loaded state during the closing operation, wherein the force transmission element (11) is preferably designed as cam element having a non-circular support surface or the force transmission element (11) is connected to a stop (27), by means of which the force transmission element (11) can be lifted together with the joint (4), upon reaching the closed position.

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15515. An airplane comprising a structural element, secured to which is an overhead luggage compartment (1), **characterized in that** the overhead luggage compartment (1) is designed according to one of claims 1 to 14.