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Indicator Lights for Storage Space Available in an Airplane Overhead Compartment

ABSTRACT

Searching for available storage space in overhead compartments on a plane often involves multiple iterations of opening, checking, and closing overhead storage compartments before a space suitable for storing the given piece of luggage is found. This manual process is inefficient and time consuming, and increases the time required for completing the flight boarding process. This disclosure describes the use of sensors in overhead compartments that detect availability of storage space. The available storage space in an overhead compartment is indicated to passengers via indicator lights and/or display screens of the in-flight entertainment system. Different colors can be used based on the amount of available storage space to aid in quick determination of compartments that are likely suitable for a given piece of luggage. The techniques can additionally enable detection of any luggage left behind in the overhead storage compartments when deplaning. The techniques can make boarding and deplaning more efficient and faster, thus helping airlines improve flight turnaround times and reduce travel delays.

KEYWORDS

- Flight boarding
- Carry-on baggage
- Overhead storage
- Storage bin
- Airplane cabin
- Occupancy sensor
- In-flight entertainment
- Forgotten luggage

BACKGROUND

After boarding a flight, many passengers store their carry-on baggage in overhead storage compartments in the plane. As passengers board and fill the plane, the overhead storage compartments start filling up. If the overhead storage compartments in the vicinity of a passenger's assigned seat are full, the passenger must look for available space elsewhere.

However, overhead storage compartments on airplanes do not provide any indication of whether a given compartment has available space. As a result, if a compartment is closed, it must be opened and visually inspected to determine whether it is full. Therefore, searching for available storage space in the overhead compartments requires passengers and/or flight attendants to open any closed compartments to check whether there is space available within them that can accommodate a given piece of luggage. It is not uncommon for this process to require several iterations of opening, checking, and closing overhead storage compartments before a space is found that is suitable for storing the piece of luggage. The manual process of finding suitable storage space for the luggage of all boarded passengers is inefficient and time consuming, thus lengthening the time required for completing the flight boarding process.

DESCRIPTION

This disclosure describes techniques to provide indicator lights that aid in quick determination of the amount of available storage space within an overhead storage compartment on an airplane to help find suitable storage space for a given piece of luggage. The light corresponding to a given overhead storage compartment can be set to a color that maps to the amount of storage space available within the compartment. For instance, the light can be green if more than half of the storage space within the compartment is available, orange if 20% to 50% of the space is available, and red if less than 20% of the space is available. The amount of storage

space available within a given overhead compartment can be estimated with any suitable technology, such as cameras, weight sensors, occupancy sensors, etc.

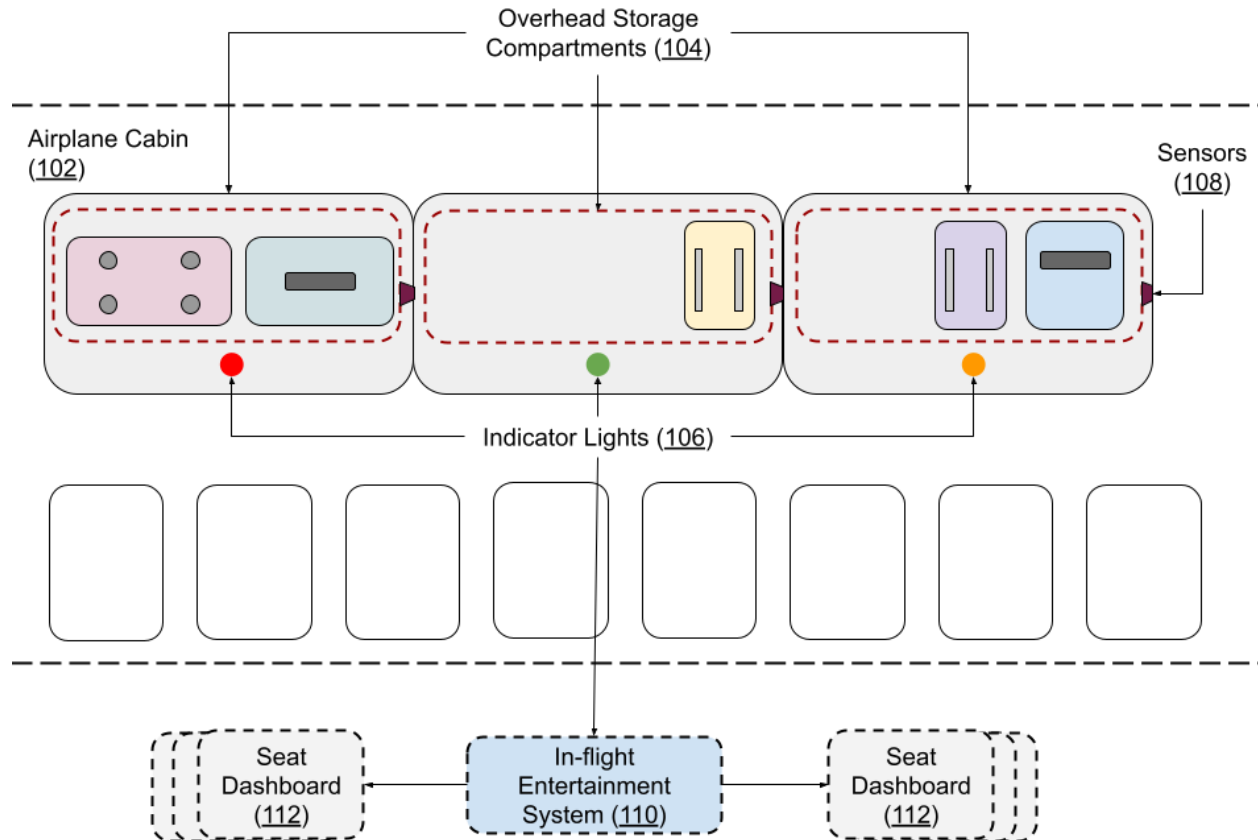


Fig. 1: At a glance indication of available overhead storage space via indicator lights

Fig. 1 shows an example operational implementation of the techniques described in this disclosure. Overhead storage compartments (104) within an airplane cabin (102) are equipped with indicator lights (106). With permission, the colors of the lights are set according to the output from one or more sensors (108) within the overhead compartments that estimate the amount of available storage space. As seen in Fig. 1, the indicator light for the compartment on the left is red to indicate that it is nearly full while that for the storage compartment in the middle is green because it has ample available space. The orange light for the overhead compartment on the right indicates that the compartment is between 50-80% full. The status of the indicator lights

can be relayed to the in-flight entertainment system (110) for displaying it within the user interface (UI) of the seat dashboards (112) at the passenger seats.

A digital version of the indicator lights can be connected to the in-flight entertainment system to enable passengers to view information on available overhead storage space via the dashboards of the in-flight entertainment system at their seats. Flight attendants can switch the indicator functionality on during the boarding process and turn it off once boarding is completed to avoid visual distraction during the flight. The specific levels of available space that map to each color of the indicator lights can be set by the manufacturers and/or specified by the airline operator and/or determined dynamically based on the boarding parameters for a given flight.

The described techniques can be implemented within any airplane that includes overhead storage compartments. Implementation of the techniques can enable passengers and flight attendants to identify suitable overhead storage spaces for a given piece of luggage with a quick glance, akin to green/red indicators in parking lots that enable drivers to spot an available parking space from afar. The indicator lights can additionally enable the detection of any luggage left behind in the overhead storage compartments after passengers have deplaned at the end of the flight. Detecting items left behind in overhead storage right at the time of deplaning can make it easier to return them to the rightful owners who are likely to be in the vicinity of the plane right after disembarking.

The use of sensors to detect storage space availability and of indicator lights to visually indicate available storage space can make the process of storage carry-on luggage on a flight less cumbersome and stressful for passengers. Moreover, the techniques can make the boarding and deplaning process more efficient and faster, thus helping airlines improve flight turnaround times and reduce travel delays.

CONCLUSION

This disclosure describes the use of sensors in overhead compartments that detect availability of storage space. The available storage space in an overhead compartment is indicated to passengers via indicator lights and/or display screens of the in-flight entertainment system. Different colors can be used based on the amount of available storage space to aid in quick determination of compartments that are likely suitable for a given piece of luggage. The techniques can additionally enable detection of any luggage left behind in the overhead storage compartments when deplaning. The techniques can make boarding and deplaning more efficient and faster, thus helping airlines improve flight turnaround times and reduce travel delays.