CLAIMS

WHAT IS CLAIMED IS:

1. An automobile space extension mechanism, comprising a space extension assembly and an adapter assembly, wherein the space extension assembly is movably installed at a tail of a compartment of an automobile body (100) through the adapter assembly; and in use, when a rear cover (101) of the compartment is opened, the space extension assembly is unfolded backwards and downwards into a frame structure through pulling and flipping operations, and an opening side of the frame structure faces the compartment of the automobile body (100) and is communicated to interior space of the compartment;wherein the space extension assembly is designed as a sliding-flipping assembly (940), comprising a flipping drive assembly (941), a flipping extension assembly (942), and a support roller (943), the flipping drive assembly (941) comprises one end connected to the left and right sides of the tail of the compartment of the automobile body (100), and the other end hinged on a sidewall of the flipping extension assembly (942); and the support roller (943) is installed at the tail of the compartment of the automobile body (100) and located below the flipping extension assembly (942); and

when the rear cover (101) of the compartment is opened, the flipping drive assembly (941) is started, such that the flipping drive assembly (941) is unfolded and drives the flipping extension assembly (942) to slide backwards and flip to a vertical state; and folding plates on the flipping extension assembly (942) are sequentially unfolded to form a frame structure.

2. The automobile space extension mechanism according to claim 1, wherein the space extension assembly is connected to left and right sides of the tail of the compartment of the automobile body (100) through a slide rail connecting assembly (200) or a guiding slide positioning plate (700), the side slide rail (202) being connected to an outer side face of a main side plate, and the upper side plate (302) and lower side plate (303) being telescopically connected to the main side plate (301) through a drawer-style slideway structure or an automatic actuator such as a linear motor or oil cylinder.

3. The automobile space extension mechanism according to claim 2, whereinthe slide rail connecting assembly (200) comprises a side guiding slide groove (201) and a side slide rail (202); the side slide rail (202) is connected to the side guiding slide groove (201) in a sliding manner, the side guiding slide groove (201) is installed on the left and right sides of the tail of the compartment of the automobile body (100), and the side slide rail (202) is connected to the space extension assembly; and the guiding slide positioning plate (700) is installed on the left

and right sides of the tail of the compartment of the automobile body (100), and the space extension assembly is connected to a chute of the guiding slide positioning plate (700) in a sliding manner.

4. The automobile space extension mechanism according to claim 3, wherein the space extension assembly comprises a side plate assembly (300), a back plate assembly (400), and a bottom plate (500) that are connected together;

the side plate assembly (300) comprises a main side plate (301), an upper side plate (302), and a lower side plate (303), the upper side plate (302) and the lower side plate (303) are respectively telescopically connected to two ends of the main side plate (301), and the side slide rail (202) is connected to an outer side face of the main side plate (301);

the back plate assembly (400) comprises an upper back plate (402), a main back plate (401), and a lower back plate (403) that are arranged from top to bottom, the main back plate (401), the upper back plate (402), and the lower back plate (403) are respectively connected in a flippable manner to outer side edges of the main side plate (301), the upper side plate (302), and the lower side plate (303); and

the bottom plate (500) is connected to a bottom edge of the lower side plate (303); wherein the upper back plate (402) and the lower back plate (403) are flipped and folded together with the upper side plate (302) and the lower side plate (303), and the main back plate (401) is flipped to be parallel to the main side plate (301), with a storage gap reserved in the middle, a thickness of the storage gap matching a total thickness of the folded plates; and inner side faces of upper and lower ends of the main side plate (301) are provided with avoidance steps, a depth of the avoidance step being not less than a total height of the upper side plate (302) and the lower side plate (303).

5. The automobile space extension mechanism according to claim 4, wherein the bottom plate (500) adopts a single-plate structure or a symmetrical double-plate structure; and when the single-plate structure is adopted, two ends of the bottom plate (500) are connected to bottom edges of two lower side plates (303) through screws; or when the double-plate structure is adopted, the bottom plate (500) is connected in a flippable manner to the bottom edge of the lower side plate (303) through a third rotary connector (501).

6. The automobile space extension mechanism according to claim 4, wherein the main back plate (401) is hinged on the outer side edge of the main side plate (301) through a second

rotary connector (405), and both the upper back plate (402) and the lower back plate (403) are connected to the outer side edges of the upper side plate (302) and the lower side plate (303) through a first rotary connector (404); and the upper back plate (402) and lower back plate (403) are flipped and then folded together with the upper side plate (302) and the lower side plate (303), the main back plate (401) is flipped and then parallel to the main side plate (301), with a storage gap reserved in the middle, and a thickness of the storage gap matches a total thickness of the folded upper side plate (302), lower side plate (303), upper back plate (402), and lower back plate (403); wherein inner side faces of upper and lower ends of the main side plate (301) are provided with avoidance steps, a depth of the avoidance step being not less than the total height of the upper side plate (302) and the lower side plate (303).

7. The automobile space extension mechanism according to claim 6, wherein inner side faces of upper and lower ends of the main side plate (301) are provided with avoidance steps, and a depth of the avoidance step is not less than a total height of the upper side plate (302) and the lower side plate (303); and a total height of the upper back plate (402) and the lower back plate (403) is not greater than a maximum total height of the upper side plate (302) and the lower side plate (303).

8. The automobile space extension mechanism according to claim 2, wherein the space extension assembly is connected to the top of the tail of the compartment of the automobile body (100) through a lifted guiding slide assembly (800), and the lifted guiding slide assembly (800) comprises an upper guiding slide groove (801) and an upper guiding slide plate (802) that are connected together in a sliding manner, the upper guiding slide groove (801) is installed on the top of the tail of the compartment of the automobile body (100), and the upper guiding slide plate (802) is installed on the space extension assembly.

9. The automobile space extension mechanism according to claim 8, wherein during lifting, the space extension assembly is set as a lifted folding assembly (900), and the lifted folding assembly (900) comprises an upper connecting plate (901), a folding side plate assembly, and a folding back plate assembly, a top surface of the upper connecting plate (901) is connected to the upper guiding slide groove (801) through the upper guiding slide plate (802) in a sliding manner, two folding side plate assemblies are symmetrically arranged and connected to left and right side edges of the upper connecting plate (901), and the folding back plate assembly is connected in a flippable manner to the folding side plate assembly.

10. The automobile space extension mechanism according to claim 9, wherein the folding side plate assembly comprises an upper folding side plate (902), an intermediate folding side plate (903), and a lower folding side plate (904) that are sequentially folded and connected together, one side edge of the upper folding side plate (902) is connected to a side edge of the upper connecting plate (901), and edges connecting the upper folding side plate (902), the intermediate folding side plate (903), and the lower folding side plate (904) are connected together through a 180° hinge structure or a flexible connector (908);

the folding back plate assembly comprises an upper folding back plate (905), an intermediate folding back plate (906), and a lower folding back plate (907), and the upper folding back plate (905), the intermediate folding back plate (906), and the lower folding back plate (907) are respectively connected to outer side edges of the upper folding side plate (902), the intermediate folding side plate (903), and the lower folding side plate (904) through a 90° hinge structure or the flexible connector (908); and

a bottom plate (500) is further comprised, wherein the bottom plate (500) adopts a double-plate structure, and the bottom plate (500) is connected in a flippable manner to a bottom edge of the lower folding side plate (904) through the 90° hinge structure or the flexible connector (908); wherein four corners of the bottom plate (500) are provided with detachable support legs (600), each support leg including an upper positioning leg and a lower telescopic leg, the telescopic leg being embedded into a central positioning hole of the positioning leg and locked by a vertically arranged limiting pin, and a positioning groove with a magnet being provided on the bottom plate (500) to ensure stability of connection.

11. The automobile space extension mechanism according to claim 2, wherein the space extension assembly is designed as an articulated flipping assembly (910), and the articulated flipping assembly (910) is connected in a flippable manner to an adaptive positioning structure through a hinge; and the articulated flipping assembly (910) comprises a flippable side plate assembly, a flippable back plate assembly, and a flippable bottom plate (917), the flippable side plate assembly comprises a main positioning plate (911) and a lower flippable side plate (912), an inner side edge of the main positioning plate (911) is hinged on the adaptive positioning structure, a side intermediate transition plate (913) is hinged between the main positioning plate (911) and the lower flippable side plate (912), and adjacent edges of the main positioning plate (911), the lower flippable side plate (912), and the side intermediate transition plate (913) are

connected together through a 90° articulation piece; and

the flippable back plate assembly comprises a rear upper flippable plate (914) and a rear lower flippable plate (915), the rear upper flippable plate (914) is hinged on an outer vertical edge of the main positioning plate (911), and the rear lower flippable plate (915) is hinged on an outer vertical edge of the lower flippable side plate (912); and a bottom edge of the rear upper flippable plate (914) is hinged on a rear intermediate transition plate (916), and the flippable bottom plate (917) is hinged on a bottom edge of the rear lower flippable plate (915); wherein the adaptive positioning structure comprises a telescopic rod (102), a bottom of the telescopic rod (102) being positioned and connected to a bottom of the compartment through a bottom connecting plate (103), a positioning hole of the bottom connecting plate (103) coinciding with a positioning hole of a seat in an automobile, a top of the telescopic rod (102) being connected to a top positioning plate (104), and a top surface of the top positioning plate (104) being connected to an adaptive member made of a flexible material; and an outer side of the telescopic rod (102) being connected to an assembly positioning plate (105), the assembly positioning plate (105) being provided with a plurality of positioning holes, and the inner side edge of the main positioning plate (911) being hinged on the assembly positioning plate (105).

12. The automobile space extension mechanism according to claim 2, wherein the space extension assembly is designed as a roof folding extension assembly (920), and the roof folding extension assembly (920) comprises an upper assembly (921) and a lower assembly (922), the upper assembly (921) comprises an upper side plate and an upper back plate that are hinged together, with a left side edge of the upper side plate hinged on the rear cover (101) of the compartment; and the lower assembly (922) comprises a lower side plate, a lower back plate, and a bottom plate, the three plates are hinged together based on corresponding edges after the three plates are flipped, and the lower side plate and the upper side plate are articulated or pulled together, and are in a stacked state when not unfolded and are of a frame structure when unfolded; wherein the lower side plate and the upper side plate are articulated or pulled together and are in a stacked state when not unfolded, and are of a frame structure when unfolded.

13. The automobile space extension mechanism according to claim 2, wherein the space extension assembly is designed as a roof Z-shaped folding assembly (930), and the roof Z-shaped folding assembly (930) comprises an upper folding assembly (931), a lower folding assembly (932), and a straight-line-shaped bottom plate (933), the upper folding assembly (931) comprises an upper side plate and an upper back plate that are hinged together, with a

left side edge of the upper side plate hinged on the rear cover (101) of the compartment; and the lower folding assembly (932) comprises a lower side plate and a lower back plate that are hinged together, left and right edges of two symmetrical lower side plates are connected to the straight-line-shaped bottom plate (933), the three plates are hinged together based on corresponding edges after the three plates are flipped, edges that are of the lower side plate and the upper side plate and close to each other are hinged together, and the lower side plate and the upper side plate are in a stacked state when not unfolded, are Z-shaped during unfolding, and are of a frame structure when completely unfolded; wherein the upper side plate and the lower side plate are hinged together and are in a stacked state when not unfolded, are Z-shaped during unfolding, and form a frame structure when completely unfolded.