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(71) Applicant: **Machan International Co., Ltd.**
438 Taichung City (TW)

(72) Inventor: **SUNG, Pei-Chang**
438 Taichung City (TW)

(74) Representative: **Michalski Hüttermann & Partner**
Patentanwälte mbB
Speditionstraße 21
40221 Düsseldorf (DE)

(54) **MULTI-LAYER TOOL STORAGE DEVICE**

(57) The present invention provides a tool storage device (10), which includes a first shelf (20) and a second shelf (30). The first shelf (20) includes a first tube (21) and a first slide seat (22) mounted at an end of the first tube (21). The first slide seat (22) has first and second slots (221, 222) in communication with each other, a first block (223) slidably mounted in the first slot (221), and a first slider (224) slidably mounted in the second slot (222). The second shelf (30) includes a second tube (31). The second tube (31) has a first position hole (311) disposed at a side wall thereof. The end of the first tube (21) is movably inserted into the second tube (31).

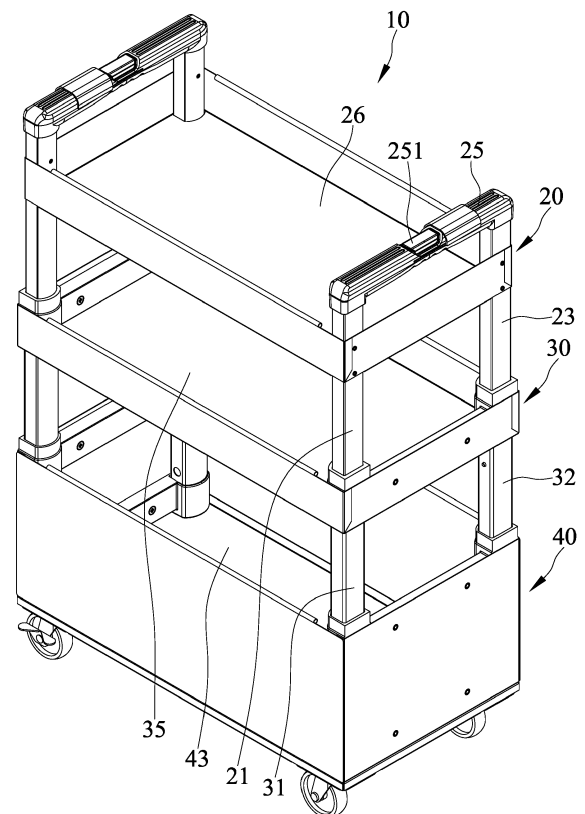


FIG. 1

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a tool storage device and, in particular, to a multi-layer tool storage device.

[0002] China Utility Model Patent No. CN206393596U discloses a storage device with fold up and lock function, including at least one slide bar, a tool rack, and a locking mechanism. The slide bar is provided with a first recess and a second recess. The tool rack is connected in this slide bar. The tool rack is provided with a first space along a plumb direction and at least one second space along a horizontal direction. The locking mechanism is mounted to the tool rack and is movable between a lock position and a release position. The locking mechanism includes a first sliding member disposed in the first space, and at least one second sliding member disposed in the second space. The second sliding member is inserted into the first recess or the second recess when the locking mechanism is in the lock position. The second sliding member is detached from the first recess or the second recess when the locking mechanism is in the release position.

[0003] However, when the storage device with the above structure is folded, it must be pushed down one-layer by one-layer, and then the slide bar is folded back to form a final folded state. The above structure is relatively complex and requires many actions in operation. Thus, the storage device cannot be quickly folded or unfolded.

[0004] Thus, a need exists for a novel storage device with easily recognizable size indicia to mitigate and/or obviate the above disadvantages.

SUMMARY OF THE INVENTION

[0005] A tool storage device according to the present invention includes a first shelf and a second shelf. The first shelf includes a first tube and a first slide seat mounted at an end of the first tube. The first slide seat has first and second slots in communication with each other, a first block slidably mounted in the first slot, a first slider slidably mounted in the second slot, a first abut portion disposed between two opposite ends of the first block, and a second abut portion disposed at an end of the first slider adjacent to the first block and abutted the first abut portion. The second shelf includes a second tube. The second tube has a first position hole disposed at a side wall thereof. The end of the first tube is movably inserted into the second shelf. The first shelf is switchable between a lock state and an unlock state and is movable relative to the second shelf between an unfolded position and a folded position. When the first shelf is in the unfolded position, the first block is aligned to the first position hole. When the first shelf is in the unfolded position and is switched to the lock state, the first block is inserted into the first position hole. When the first shelf is switched to

the unlock state, the first slider is moved toward the first block and abuts the first block to cause the first block detached from the first position hole to permit the first shelf movable relative to the second shelf.

[0006] In an example, the first shelf includes a third tube parallel to the first tube, and a second slide seat mounted at an end of the third tube. The second slide seat has third and fourth slots in communication with each other, a second block slidably mounted in the third slot, a second slider slidably mounted in the fourth slot, a third abut portion disposed between two opposite ends of the second block, and a fourth abut portion disposed at an end of the second slider adjacent to the second block and abutted the third abut portion. The second shelf includes a fourth tube parallel to the third tube. The fourth tube has a second position hole disposed at a side wall thereof. The end of the third tube is movably inserted into the fourth tube. When the first shelf is in the unfolded position, the second block is aligned to the second position hole. When the first shelf is in the unfolded position and is switched to the lock state, the second block is inserted into the second position hole. When the first shelf is switched to the unlock state, the second slider is moved toward the second block and abuts the second block to cause the second block detached from the second position hole.

[0007] In an example, the first shelf includes a first handle fixed to an end of the first tube opposite to the first slide seat and an end of the third tube opposite to the second slide seat. The first tube includes a first push rod movably mounted therein and abutted the first slider. The third tube includes second push rod movably mounted therein and abutted the second slider. The first handle has a button movably mounted thereon and abutted an end of the first push rod opposite to the first slider and an end of the second push rod opposite to the second slider.

[0008] In an example, the first handle has a cover mounted on an outer periphery of the button.

[0009] In an example, the first and second abut portions are bevel faces not parallel and not perpendicular to extend directions of the first and second slots, and the third and fourth abut portions are bevel faces not parallel and not perpendicular to extend directions of the third and fourth slots.

[0010] In an example, a first elastic member is disposed in the first slot and abuts between the first slot and the first block, and a second elastic member is disposed in the third slot and abuts between the third slot and the second block. When the first shelf is in the unfolded position and is switched to the lock state, the first elastic member is located at a side of the first block opposite to the first position hole and pushes the first block to cause the first block inserted into the first position hole. When the first shelf is in the unfolded position and is switched to the lock state, the second elastic member is located at a side of the second block opposite to the second position hole and pushes the second block to cause the

second block inserted into the second position hole.

[0011] In an example, the second tube has a third position hole disposed at the side wall thereof and spaced from the first position hole, and the fourth tube has a fourth position hole disposed at the side wall thereof and spaced from the second position hole. When the first shelf is in the folded position, the first block is aligned to the third position hole, and the second block is aligned to the fourth position hole.

[0012] In an example, the second shelf includes a third slide seat mounted at an end of the second tube opposite to the first tube and a fourth slide seat mounted at an end of the fourth tube opposite to the third tube. The third slide seat has fifth and sixth slots in communication with each other, a third block slidably mounted in the fifth slot, a third slider slidably mounted in the sixth slot, a fifth abut portion disposed between two opposite ends of the third block, and a sixth abut portion disposed at an end of the third slider adjacent to the third block and abutted the fifth abut portion. The fourth slide seat has seventh and eighth slots in communication with each other, a fourth block slidably mounted in the seventh slot, a fourth slider slidably mounted in the eighth slot, a seventh abut portion disposed between two opposite ends of the fourth block, and an eighth abut portion disposed at an end of the fourth slider adjacent to the fourth block and abutted the seventh abut portion. The tool storage device further includes a third shelf including a fifth tube and a sixth tube parallel to each other. The fifth tube has a fifth position hole disposed at a side wall thereof. The end of the second tube opposite to the first tube is movably inserted into the fifth tube. The sixth tube has a sixth position hole disposed at a side wall thereof. The end of the fourth tube opposite to the third tube is movably inserted into the sixth tube. The second shelf is switchable between a lock state and an unlock state and is movable relative to the third shelf between an unfolded position and a folded position. When the second shelf is in the unfolded position, the third block is aligned to the fifth position hole, and the fourth block is aligned to the sixth position hole. When the second shelf is in the unfolded position and is switched to the lock state, the third block is inserted into the fifth position hole, and the fourth block is inserted into the sixth position hole. When the second shelf is switched to the unlock state, the third slider is moved toward the third block and abuts the third block to cause the third block detached from the fifth position hole, and the fourth slider is moved toward the fourth block and abuts the fourth block to cause the fourth block detached from the sixth position hole.

[0013] In an example, the fifth tube has a first lock hole disposed at the side wall thereof. The sixth tube has a second lock hole disposed at the side wall thereof. When the first shelf and the second shelf are in the folded position, the first block is aligned to the third position hole and the first lock hole, and the second block is aligned to the fourth position hole and the second lock hole. When the first shelf and the second shelf are in the folded po-

sition and the first shelf is switchable to the lock state, the first block is inserted into the third position hole and the first lock hole, and the second block is inserted into the fourth position hole and the second lock hole.

[0014] In an example, when the first shelf is in the folded position, the first slide seat abuts the third slider, and the second slide seat abuts the fourth slider to cause the second shelf switched to the unlock state and moved to the folded position.

[0015] In an example, the fifth and sixth abut portions are bevel faces not parallel and not perpendicular to extend directions of the fifth and sixth slots, and the seventh and eighth abut portions are bevel faces not parallel and not perpendicular to extend directions of the seventh and eighth slots.

[0016] In an example, a third elastic member is disposed in the fifth slot and abuts between the fifth slot and the third block, and a fourth elastic member is disposed in the seventh slot and abuts between the seventh slot and the fourth block. When the second shelf is in the unfolded position and is switched to the lock state, the third elastic member is located at a side of the third block opposite to the fifth position hole and pushes the third block to cause the third block inserted into the fifth position hole. When the second shelf is in the unfolded position and is switched to the lock state, the fourth elastic member is located at a side of the fourth block opposite to the sixth position hole and pushes the fourth block to cause the fourth block inserted into the sixth position hole.

[0017] In an example, the first shelf includes a first platform fixed between the first and third tubes, the second shelf includes a second platform fixed between the second and fourth tubes, and the third shelf includes a third platform fixed between the fifth and sixth tubes.

[0018] In an example, the first shelf includes a seventh tube, an eighth tube, and a second handle fixed to the seventh and eighth tubes. The seventh tube has a structure the same as that of the first tube, the eighth tube has a structure the same as that of the third tube, and the second handle has a structure the same as that of the first handle. The first platform is fixed to the seventh and eighth tubes. The first and seventh tubes are arranged at two opposite corners of the first platform, and the third and eighth tubes are arranged at two opposite corners of the first platform. The second shelf includes a ninth tube and a tenth tube. The ninth tube has a structure the same as that of the second tube, and the tenth tube has a structure the same as that of the fourth tube. The second platform is fixed to the ninth and tenth tubes. The ninth and tenth tubes are arranged at an end of the second platform opposite to the second and fourth tubes. The third shelf includes an eleventh tube and a twelfth tube. The eleventh tube has a structure the same as that of the fifth tube, and the twelfth tube has a structure the same as that of the sixth tube. The third platform is fixed to the eleventh and twelfth tubes. The eleventh and twelfth tubes are arranged at an end of the third platform opposite to the fifth and sixth tubes.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

FIG 1 is a perspective view of a tool storage device according to the present invention.

FIGS. 2-4 are exploded, perspective views of the tool storage device of FIG. 1.

FIGS. 5-10 are partial cross-sectional views of the tool storage device of FIG. 1.

FIG 11 is another perspective view of a tool storage device according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0020] FIGS. 1-11 show a tool storage device 10 according to the present invention. The tool storage device 10 includes a first shelf 20, a second shelf 30, and a third shelf 40.

[0021] The first shelf 20 includes a first tube 21 and a first slide seat 22 mounted at an end of the first tube 21. The first slide seat 22 has first and second slots 221 and 222 in communication with each other, a first block 223 slidably mounted in the first slot 221, a first slider 224 slidably mounted in the second slot 222, a first abut portion 225 disposed between two opposite ends of the first block 223, and a second abut portion 226 disposed at an end of the first slider 224 adjacent to the first block 223 and abutted the first abut portion 225. The first and second abut portions 225 and 226 are bevel faces not parallel and not perpendicular to extend directions of the first and second slots 221 and 222. A first elastic member 227 is disposed in the first slot 221 and abuts between the first slot 221 and the first block 223.

[0022] The second shelf 30 includes a second tube 31. The second tube 31 has a first position hole 311 disposed at a side wall thereof. The end of the first tube 21 is movably inserted into the second shelf 30.

[0023] The first shelf 20 includes a third tube 23 parallel to the first tube 21, and a second slide seat 24 mounted at an end of the third tube 23. The second slide seat 24 has third and fourth slots 241 and 242 in communication with each other, a second block 243 slidably mounted in the third slot 241, a second slider 244 slidably mounted in the fourth slot 242, a third abut portion 245 disposed between two opposite ends of the second block 243, and a fourth abut portion 246 disposed at an end of the second slider 244 adjacent to the second block 243 and abutted the third abut portion 245. The third and fourth abut portions 245 and 246 are bevel faces not parallel and not perpendicular to extend directions of the third and fourth slots 241 and 242. A second elastic member 247 is disposed in the third slot 241 and abuts between the third slot 241 and the second block 243.

[0024] The second shelf 30 includes a fourth tube 32 parallel to the third tube 23. The fourth tube 32 has a second position hole 321 disposed at a side wall thereof. The end of the third tube 23 is movably inserted into the

fourth tube 32.

[0025] The second tube 31 has a third position hole 312 disposed at the side wall thereof and spaced from the first position hole 311. The fourth tube 32 has a fourth position hole 322 disposed at the side wall thereof and spaced from the second position hole 321.

[0026] The first shelf 20 includes a first handle 25 and a first platform 26. The first handle 25 is fixed to an end of the first tube 21 opposite to the first slide seat 22 and an end of the third tube 23 opposite to the second slide seat 24. The first platform 26 is fixed between the first and third tubes 21 and 23.

[0027] The first tube 21 includes a first push rod 211 movably mounted therein and abutted the first slider 224.

The third tube 23 includes second push rod 231 movably mounted therein and abutted the second slider 244. The first handle 25 has a button 251 movably mounted thereon and abutted an end of the first push rod 211 opposite to the first slider 224 and an end of the second push rod 231 opposite to the second slider 244.

[0028] The first shelf 20 is switchable between a lock state and an unlock state and is movable relative to the second shelf 30 between an unfolded position and a folded position. When the first shelf 20 is in the unfolded position, the first block 223 is aligned to the first position hole 311, and the second block 243 is aligned to the second position hole 321. When the first shelf 20 is in the unfolded position and is switched to the lock state, the first elastic member 227 is located at a side of the first block 223 opposite to the first position hole 311 and pushes the first block 223 to cause the first block 223 inserted into the first position hole 311, and the second elastic member 247 is located at a side of the second block 243 opposite to the second position hole 321 and pushes the second block 243 to cause the second block 243 inserted into the second position hole 321. Therefore, the first shelf 20 cannot be movable relative to the second shelf 30 in the lock state of the first shelf 20.

[0029] When the first shelf 20 is switched to the unlock state, the first slider 224 is moved toward the first block 223 and abuts the first block 223 to cause the first block 223 detached from the first position hole 311, and the second slider 244 is moved toward the second block 243 and abuts the second block 243 to cause the second block 243 detached from the second position hole 321, to permit the first shelf 20 movable relative to the second shelf 30 (FIG. 7).

[0030] When the first shelf 20 is in the folded position, the first block 223 is aligned to the third position hole 312, and the second block 243 is aligned to the fourth position hole 322 (FIG. 8).

[0031] The second shelf 30 includes a third slide seat 33 mounted at an end of the second tube 31 opposite to the first tube 21 and a fourth slide seat 34 mounted at an end of the fourth tube 32 opposite to the third tube 23. The third slide seat 33 has fifth and sixth slots 331 and 332 in communication with each other, a third block 333 slidably mounted in the fifth slot 331, a third slider 334

slidably mounted in the sixth slot 332, a fifth abut portion 335 disposed between two opposite ends of the third block 333, and a sixth abut portion 336 disposed at an end of the third slider 334 adjacent to the third block 333 and abutted the fifth abut portion 335. The fifth and sixth abut portions 335 and 336 are bevel faces not parallel and not perpendicular to extend directions of the fifth and sixth slots 331 and 332. A third elastic member 337 is disposed in the fifth slot 331 and abuts between the fifth slot 331 and the third block 333.

[0032] The fourth slide seat 34 has seventh and eighth slots 341, 342 in communication with each other, a fourth block 343 slidably mounted in the seventh slot 341, a fourth slider 344 slidably mounted in the eighth slot 342, a seventh abut portion 345 disposed between two opposite ends of the fourth block 343, and an eighth abut portion 346 disposed at an end of the fourth slider 344 adjacent to the fourth block 343 and abutted the seventh abut portion 345. The seventh and eighth abut portions 345 and 346 are bevel faces not parallel and not perpendicular to extend directions of the seventh and eighth slots 341 and 342. A fourth elastic member 347 is disposed in the seventh slot 341 and abuts between the seventh slot 341 and the fourth block 343.

[0033] The second shelf 30 includes a second platform 35 fixed between the second and fourth tubes 31 and 32.

[0034] The third shelf 40 includes a fifth tube 41 and a sixth tube 42 parallel to each other.

[0035] The fifth tube 41 has a fifth position hole 411 disposed at a side wall thereof. The end of the second tube 31 opposite to the first tube 21 is movably inserted into the fifth tube 41. The sixth tube 42 has a sixth position hole 421 disposed at a side wall thereof. The end of the fourth tube 32 opposite to the third tube 23 is movably inserted into the sixth tube 42.

[0036] The fifth tube 41 has a first lock hole 412 disposed at the side wall thereof. The sixth tube 42 has a second lock hole 422 disposed at the side wall thereof.

[0037] The third shelf 40 includes a third platform 43 fixed between the fifth and sixth tubes 41 and 42.

[0038] The second shelf 30 is switchable between a lock state and an unlock state and is movable relative to the third shelf 40 between an unfolded position and a folded position.

[0039] When the second shelf 30 is in the unfolded position, the third block 333 is aligned to the fifth position hole 411, and the fourth block 343 is aligned to the sixth position hole 421. When the second shelf 30 is in the unfolded position and is switched to the lock state, the third elastic member 337 is located at a side of the third block 333 opposite to the fifth position hole 411 and pushes the third block 333 to cause the third block 333 inserted into the fifth position hole 411, and the fourth elastic member 347 is located at a side of the fourth block 343 opposite to the sixth position hole 421 and pushes the fourth block 343 to cause the fourth block 343 inserted into the sixth position hole 421. Therefore, the second shelf 30 cannot be movable relative to the third shelf 40 in the

lock state of the second shelf 30.

[0040] When the second shelf 30 is switched to the unlock state, the third slider 334 is moved toward the third block 333 and abuts the third block 333 to cause the third block 333 detached from the fifth position hole 411, and the fourth slider 344 is moved toward the fourth block 343 and abuts the fourth block 343 to cause the fourth block 343 detached from the sixth position hole 421. Therefore, the second shelf 30 can be movable relative to the third shelf 40 in the unlock state of the second shelf 30.

[0041] When the first shelf 20 is in the folded position, the first slide seat 22 abuts the third slider 334, and the second slide seat 24 abuts the fourth slider 344 to cause the second shelf 30 switched to the unlock state and is moved to the folded position.

[0042] When the first shelf 20 and the second shelf 30 are in the folded position, the first block 223 is aligned to the third position hole 312 and the first lock hole 412, and the second block 243 is aligned to the fourth position hole 322 and the second lock hole 422. When the first shelf 20 and the second shelf 30 are in the folded position and the first shelf 20 is switchable to the lock state, the first block 223 is inserted into the third position hole 312 and the first lock hole 412, and the second block 243 is inserted into the fourth position hole 322 and the second lock hole 422. Therefore, the first shelf 20 and the second shelf 30 are locked in the folded position and cannot to be moved to the unfolded position.

[0043] The first handle 25 has a cover 252 mounted on an outer periphery of the button 251 to provide the function of preventing mistakenly touching.

[0044] The first shelf 20 includes a seventh tube 27, an eighth tube 28, and a second handle 29 fixed to the seventh and eighth tubes 27 and 28. The seventh tube 27 has a structure the same as that of the first tube 21, the eighth tube 28 has a structure the same as that of the third tube 23, and the second handle 29 has a structure the same as that of the first handle 25. The first platform 26 is fixed to the seventh and eighth tubes 27 and 28. The first and seventh tubes 21 and 27 are arranged at two opposite corners of the first platform 26, and the third and eighth tubes 23 and 28 are arranged at another two opposite corners of the first platform 26. The second shelf 30 includes a ninth tube 36 and a tenth tube 37. The ninth tube 36 has a structure the same as that of the second tube 31, and the tenth tube 37 has a structure the same as that of the fourth tube 32. The second platform 35 is fixed to the ninth and tenth tubes 36 and 37. The ninth and tenth tubes 36 and 37 are arranged at an end of the second platform 35 opposite to the second and fourth tubes 31 and 32. The third shelf 40 includes an eleventh tube 44 and a twelfth tube 45. The eleventh tube 44 has a structure the same as that of the fifth tube 41, and the twelfth tube 45 has a structure the same as that of the sixth tube 42. The third platform 43 is fixed to the eleventh and twelfth tubes 44 and 45. The eleventh and twelfth tubes 44 and 45 are arranged at an end of

the third platform 43 opposite to the fifth and sixth tubes 41 and 42.

[0045] The tool storage device 10 can provide a very quick and simple folding manner through the above-mentioned structure. The first shelf 20 can naturally fall after pressing the button 251, and the first shelf 20 can be gently lowered to move to the folded position, and the second shelf 30 is also driven simultaneously to move to the folded position.

[0046] While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. For example, any of the elements associated with the privacy summary may employ any of the desired functionality set forth hereinabove. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above-described exemplary embodiments.

Claims

1. A tool storage device (10) comprising:

a first shelf (20) including a first tube (21) and a first slide seat (22) mounted at an end of the first tube (21), wherein the first slide seat (22) has first and second slots (221, 222) in communication with each other, a first block (223) slidably mounted in the first slot (221), a first slider (224) slidably mounted in the second slot (222), a first abut portion (225) disposed between two opposite ends of the first block (223), and a second abut portion (226) disposed at an end of the first slider (224) adjacent to the first block (223) and abutted the first abut portion (225); and a second shelf (30) including a second tube (31), wherein the second tube (31) has a first position hole (311) disposed at a side wall thereof, wherein the end of the first tube (21) is movably inserted into the second shelf (30); wherein the first shelf (20) is switchable between a lock state and an unlock state and is movable relative to the second shelf (30) between an unfolded position and a folded position; wherein when the first shelf (20) is in the unfolded position, the first block (223) is aligned to the first position hole (311), and wherein when the first shelf (20) is in the unfolded position and is switched to the lock state, the first block (223) is inserted into the first position hole (311); wherein when the first shelf (20) is switched to the unlock state, the first slider (224) is moved toward the first block (223) and abuts the first block (223) to cause the first block (223) detached from the first position hole (311) to permit the first shelf (20) movable relative to the second shelf (30).

2. The tool storage device (10) as claimed in claim 1, wherein the first shelf (20) includes a third tube (23) parallel to the first tube (21), and a second slide seat (24) mounted at an end of the third tube (23), wherein the second slide seat (24) has third and fourth slots (241, 242) in communication with each other, a second block (243) slidably mounted in the third slot (241), a second slider (244) slidably mounted in the fourth slot (242), a third abut portion (245) disposed between two opposite ends of the second block (243), and a fourth abut portion (246) disposed at an end of the second slider (244) adjacent to the second block (243) and abutted the third abut portion (245), wherein the second shelf (30) includes a fourth tube (32) parallel to the third tube (23), wherein the fourth tube (32) has a second position hole (321) disposed at a side wall thereof, and wherein the end of the third tube (23) is movably inserted into the fourth tube (32); wherein when the first shelf (20) is in the unfolded position, the second block (243) is aligned to the second position hole (321), and wherein when the first shelf (20) is in the unfolded position and is switched to the lock state, the second block (243) is inserted into the second position hole (321); wherein when the first shelf (20) is switched to the unlock state, the second slider (244) is moved toward the second block (243) and abuts the second block (243) to cause the second block (243) detached from the second position hole (321).
3. The tool storage device (10) as claimed in claim 2, wherein the first shelf (20) includes a first handle (25) fixed to an end of the first tube (21) opposite to the first slide seat (22) and an end of the third tube (23) opposite to the second slide seat (24), wherein the first tube (21) includes a first push rod (211) movably mounted therein and abutted the first slider (224), wherein the third tube (23) includes second push rod (231) movably mounted therein and abutted the second slider (244), and wherein the first handle (25) has a button (251) movably mounted thereon and abutted an end of the first push rod (211) opposite to the first slider (224) and an end of the second push rod (231) opposite to the second slider (244).
4. The tool storage device (10) as claimed in claim 3, wherein the first handle (25) has a cover (252) mounted on an outer periphery of the button (251).
5. The tool storage device (10) as claimed in claims 3 or 4, wherein the first and second abut portions (225, 226) are bevel faces not parallel and not perpendicular to extend directions of the first and second slots (221, 222), and wherein the third and fourth abut portions (245, 246) are bevel faces not parallel and not perpendicular to extend directions of the third and fourth slots (241, 242).

6. The tool storage device (10) as claimed in claim 5, wherein a first elastic member (227) is disposed in the first slot (221) and abuts between the first slot (221) and the first block (223), and wherein a second elastic member (247) is disposed in the third slot (241) and abuts between the third slot (241) and the second block (243); wherein when the first shelf (20) is in the unfolded position and is switched to the lock state, the first elastic member (227) is located at a side of the first block (223) opposite to the first position hole (311) and pushes the first block (223) to cause the first block (223) inserted into the first position hole (311); wherein when the first shelf (20) is in the unfolded position and is switched to the lock state, the second elastic member (247) is located at a side of the second block (243) opposite to the second position hole (321) and pushes the second block (243) to cause the second block (243) inserted into the second position hole (321).
7. The tool storage device (10) as claimed in claim 6, wherein the second tube (31) has a third position hole (312) disposed at the side wall thereof and spaced from the first position hole (311), and wherein the fourth tube (32) has a fourth position hole (322) disposed at the side wall thereof and spaced from the second position hole (321); wherein when the first shelf (20) is in the folded position, the first block (223) is aligned to the third position hole (312), and the second block (243) is aligned to the fourth position hole (322).
8. The tool storage device (10) as claimed in claim 7, wherein the second shelf (30) includes a third slide seat (33) mounted at an end of the second tube (31) opposite to the first tube (21) and a fourth slide seat (34) mounted at an end of the fourth tube (32) opposite to the third tube (23), wherein the third slide seat (33) has fifth and sixth slots (331, 332) in communication with each other, a third block (333) slidably mounted in the fifth slot (331), a third slider (334) slidably mounted in the sixth slot (332), a fifth abut portion (335) disposed between two opposite ends of the third block (333), and a sixth abut portion (336) disposed at an end of the third slider (334) adjacent to the third block (333) and abutted the fifth abut portion (335), and wherein the fourth slide seat (34) has seventh and eighth slots (341, 342) in communication with each other, a fourth block (343) slidably mounted in the seventh slot (341), a fourth slider (344) slidably mounted in the eighth slot (342), a seventh abut portion (345) disposed between two opposite ends of the fourth block (343), and an eighth abut portion (346) disposed at an end of the fourth slider (344) adjacent to the fourth block (343) and abutted the seventh abut portion (345); wherein the tool storage device (10) further comprises:

es:

- a third shelf (40) including a fifth tube (41) and a sixth tube (42) parallel to each other, wherein the fifth tube (41) has a fifth position hole (411) disposed at a side wall thereof, wherein the end of the second tube (31) opposite to the first tube (21) is movably inserted into the fifth tube (41), wherein the sixth tube (42) has a sixth position hole (421) disposed at a side wall thereof, and wherein the end of the fourth tube (32) opposite to the third tube (23) is movably inserted into the sixth tube (42); wherein the second shelf (30) is switchable between a lock state and an unlock state and is movable relative to the third shelf (40) between an unfolded position and a folded position; wherein when the second shelf (30) is in the unfolded position, the third block (333) is aligned to the fifth position hole (411), and the fourth block (343) is aligned to the sixth position hole (421); wherein when the second shelf (30) is in the unfolded position and is switched to the lock state, the third block (333) is inserted into the fifth position hole (411), and the fourth block (343) is inserted into the sixth position hole (421); wherein when the second shelf (30) is switched to the unlock state, the third slider (334) is moved toward the third block (333) and abuts the third block (333) to cause the third block (333) detached from the fifth position hole (411), and the fourth slider (344) is moved toward the fourth block (343) and abuts the fourth block (343) to cause the fourth block (343) detached from the sixth position hole (421).
9. The tool storage device (10) as claimed in claim 8, wherein the fifth tube (41) has a first lock hole (412) disposed at the side wall thereof, wherein the sixth tube (42) has a second lock hole (422) disposed at the side wall thereof; wherein when the first shelf (20) and the second shelf (30) are in the folded position, the first block (223) is aligned to the third position hole (312) and the first lock hole (412), and the second block (243) is aligned to the fourth position hole (322) and the second lock hole (422); wherein when the first shelf (20) and the second shelf (30) are in the folded position and the first shelf (20) is switchable to the lock state, the first block (223) is inserted into the third position hole (312) and the first lock hole (412), and the second block (243) is inserted into the fourth position hole (322) and the second lock hole (422).
10. The tool storage device (10) as claimed in claim 9, wherein when the first shelf (20) is in the folded po-

sition, the first slide seat (22) abuts the third slider (334), and the second slide seat (24) abuts the fourth slider (344) to cause the second shelf (30) switched to the unlock state and moved to the folded position.

11. The tool storage device (10) as claimed in claim 10, wherein the fifth and sixth abut portions (335, 336) are bevel faces not parallel and not perpendicular to extend directions of the fifth and sixth slots (331, 332), and wherein the seventh and eighth abut portions (345, 346) are bevel faces not parallel and not perpendicular to extend directions of the seventh and eighth slots (341, 342).
12. The tool storage device (10) as claimed in claim 11, wherein a third elastic member (337) is disposed in the fifth slot (331) and abuts between the fifth slot (331) and the third block (333), and wherein a fourth elastic member (347) is disposed in the seventh slot (341) and abuts between the seventh slot (341) and the fourth block (343); wherein when the second shelf (30) is in the unfolded position and is switched to the lock state, the third elastic member (337) is located at a side of the third block (333) opposite to the fifth position hole (411) and pushes the third block (333) to cause the third block (333) inserted into the fifth position hole (411); wherein when the second shelf (30) is in the unfolded position and is switched to the lock state, the fourth elastic member (347) is located at a side of the fourth block (343) opposite to the sixth position hole (421) and pushes the fourth block (343) to cause the fourth block (343) inserted into the sixth position hole (421).
13. The tool storage device (10) as claimed in claim 12, wherein the first shelf (20) includes a first platform (26) fixed between the first and third tubes (21, 23), wherein the second shelf (30) includes a second platform (35) fixed between the second and fourth tubes (31, 32), and wherein the third shelf (40) includes a third platform (43) fixed between the fifth and sixth tubes (41, 42).
14. The tool storage device (10) as claimed in claim 13, wherein the first shelf (20) includes a seventh tube (27), an eighth tube (28), and a second handle (29) fixed to the seventh and eighth tubes (27, 28), wherein the seventh tube (27) has a structure the same as that of the first tube (21), wherein the eighth tube (28) has a structure the same as that of the third tube (23), wherein the second handle (29) has a structure the same as that of the first handle (25), wherein the first platform (26) is fixed to the seventh and eighth tubes (27, 28), wherein the first and seventh tubes (21, 27) are arranged at two opposite corners of the first platform (26), wherein the third and eighth tubes (23, 28) are arranged at two opposite corners of the first platform (26), wherein the second shelf (30) in-

cludes a ninth tube (36) and a tenth tube (37), wherein the ninth tube (36) has a structure the same as that of the second tube (31), wherein the tenth tube (37) has a structure the same as that of the fourth tube (32), wherein the second platform (35) is fixed to the ninth and tenth tubes (36, 37), wherein the ninth and tenth tubes (36, 37) are arranged at an end of the second platform (35) opposite to the second and fourth tubes (31, 32), wherein the third shelf (40) includes an eleventh tube (44) and a twelfth tube (45), wherein the eleventh tube (44) has a structure the same as that of the fifth tube (41), wherein the twelfth tube (45) has a structure the same as that of the sixth tube (42), wherein the third platform (43) is fixed to the eleventh and twelfth tubes (44, 45), and wherein the eleventh and twelfth tubes (44, 45) are arranged at an end of the third platform (43) opposite to the fifth and sixth tubes (41, 42).

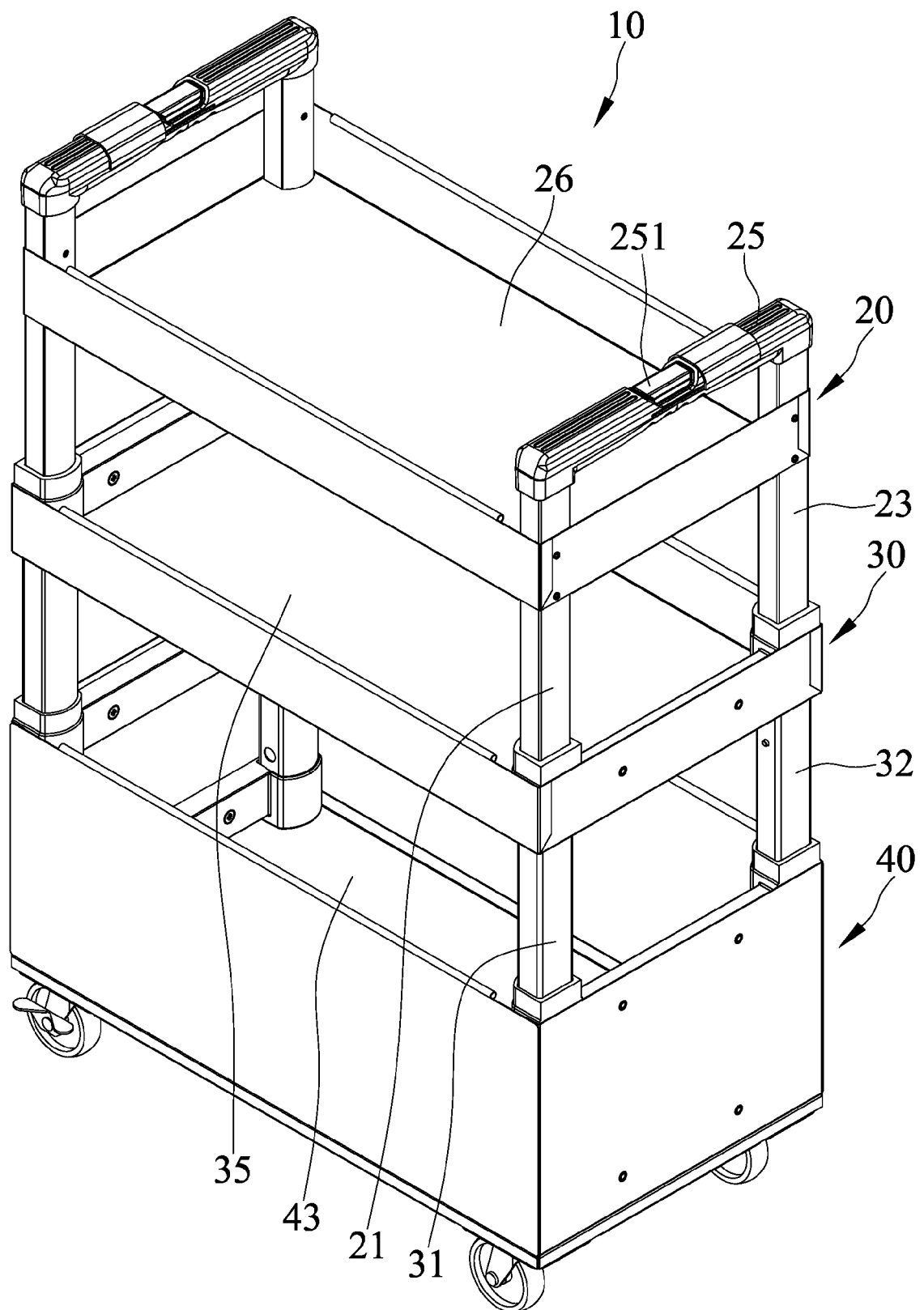


FIG. 1

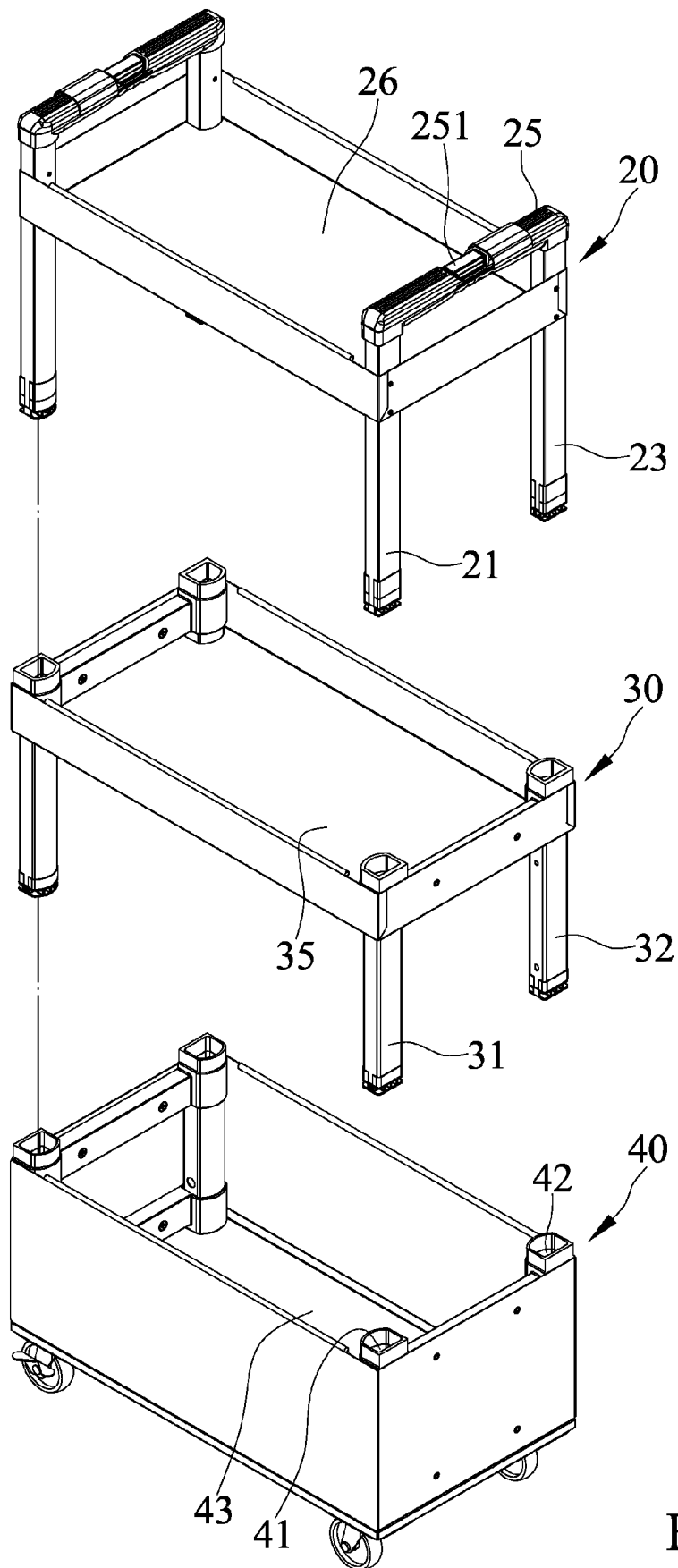


FIG. 2

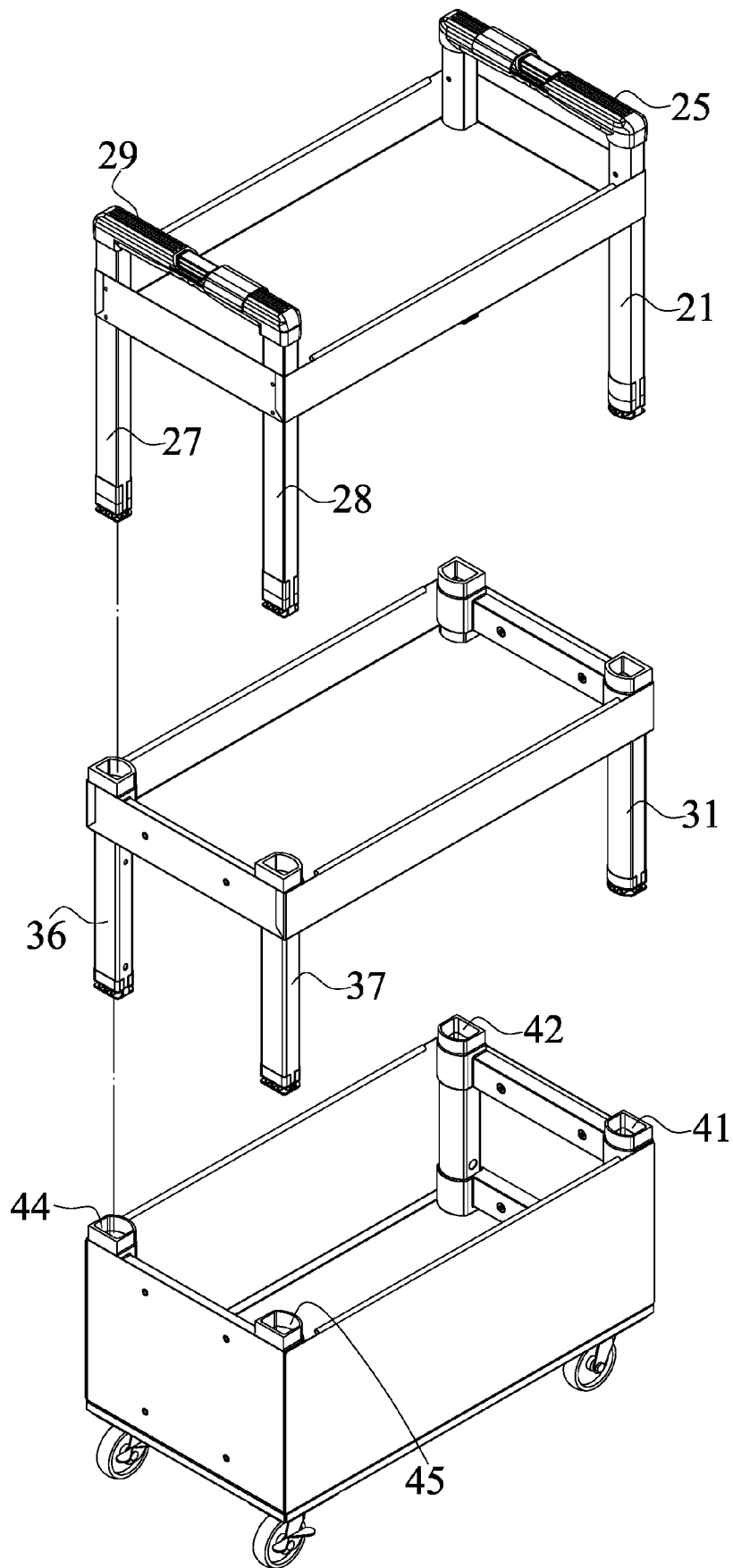
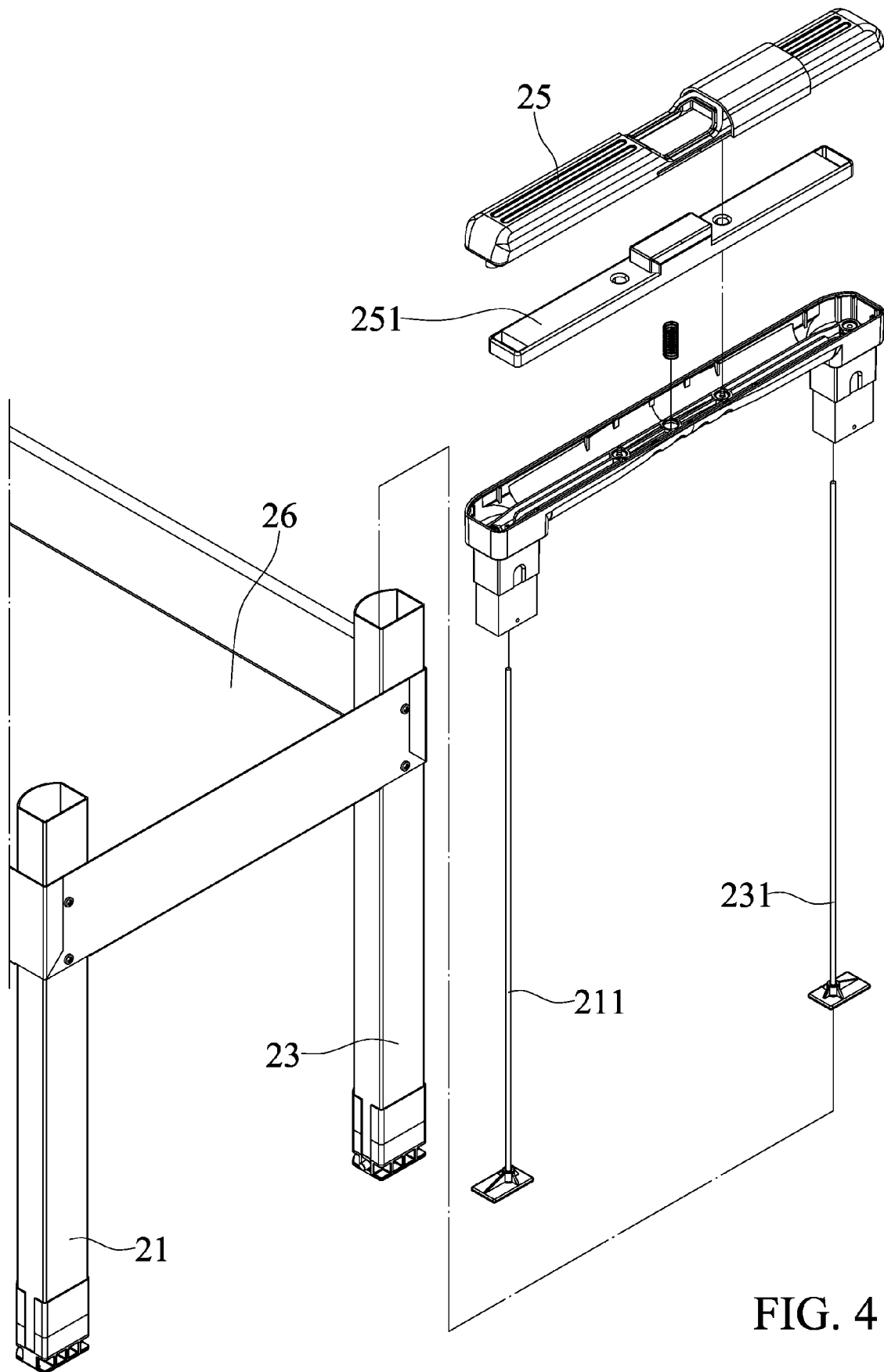


FIG. 3



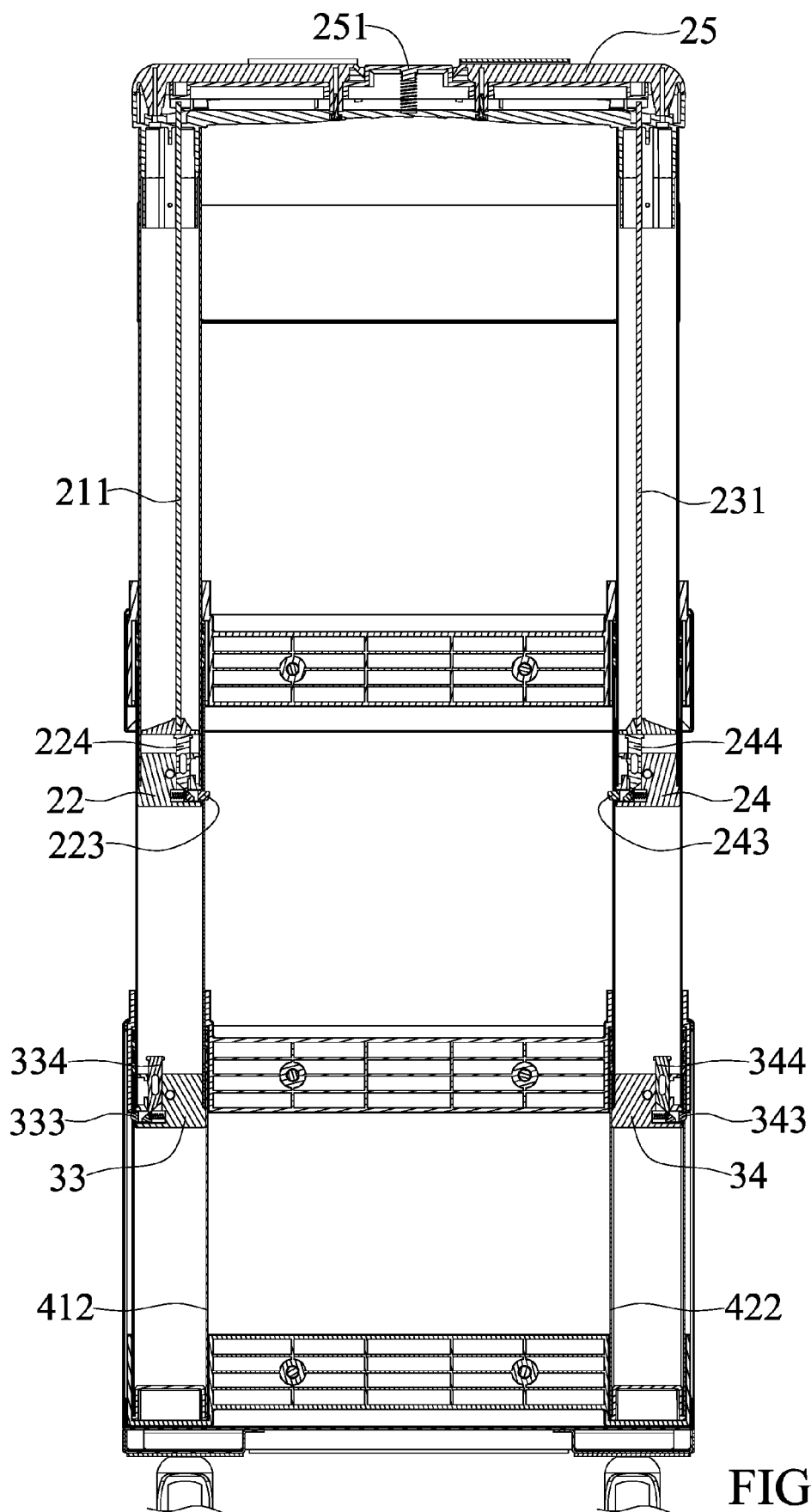
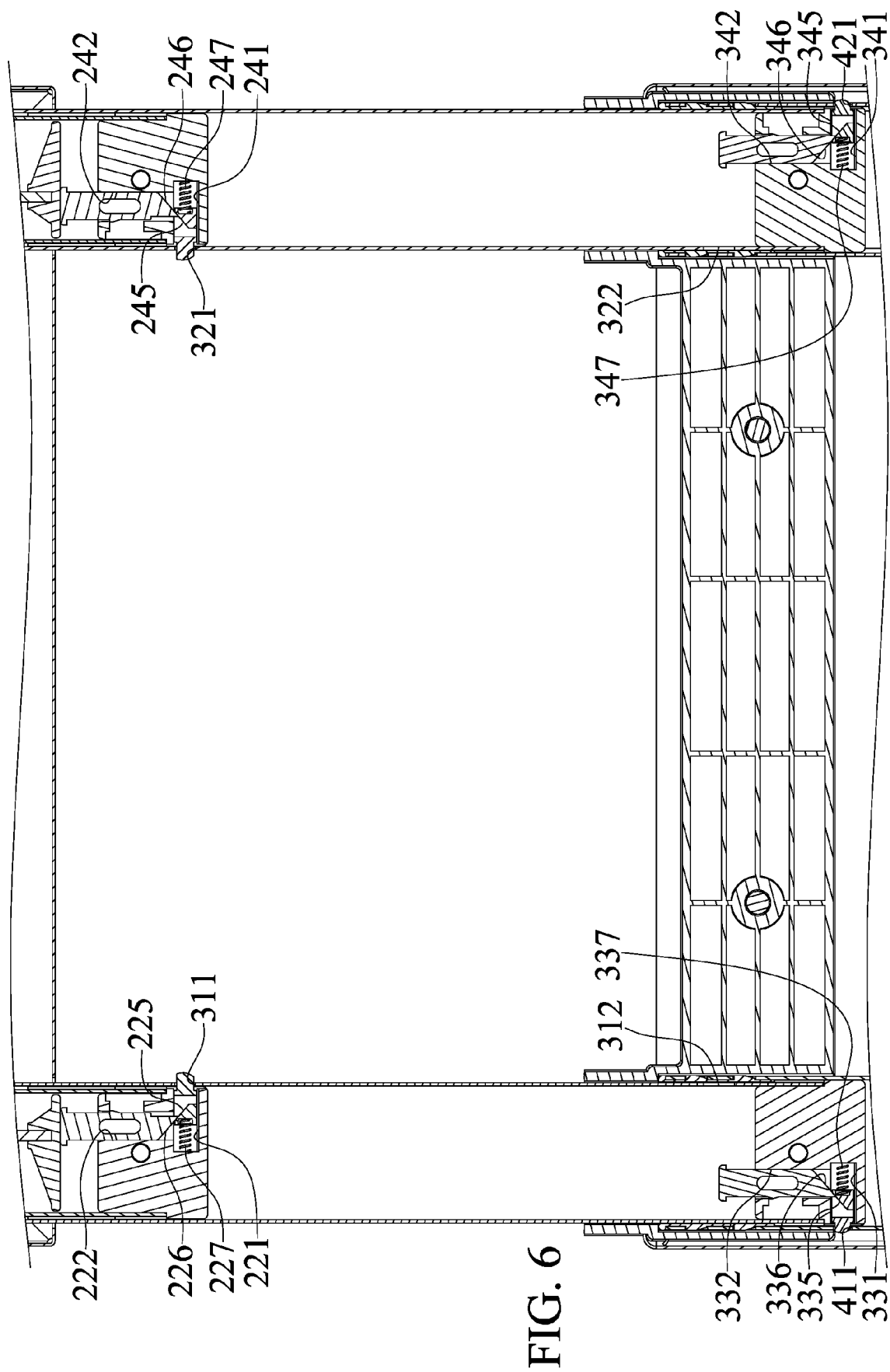


FIG. 5



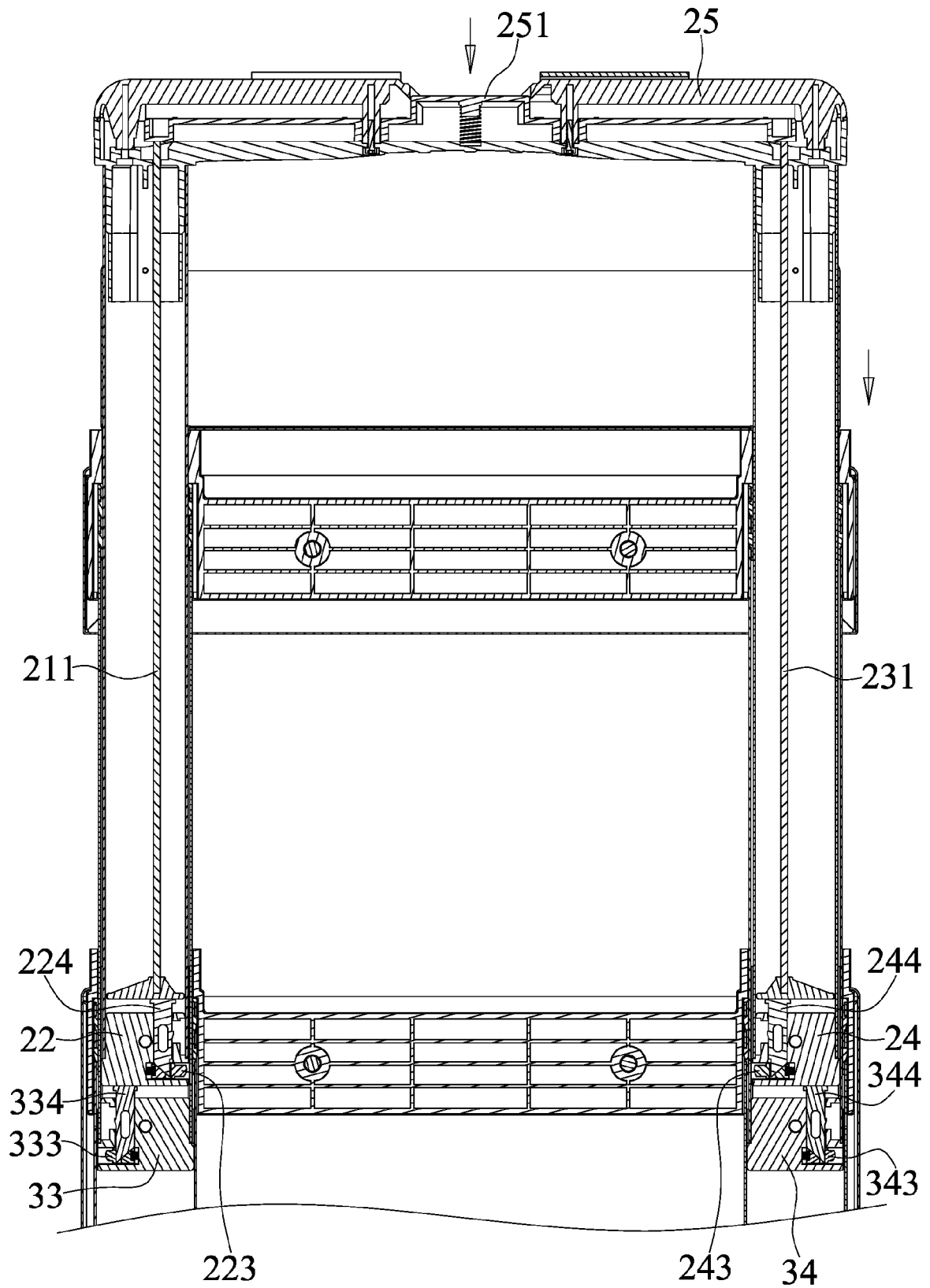


FIG. 7

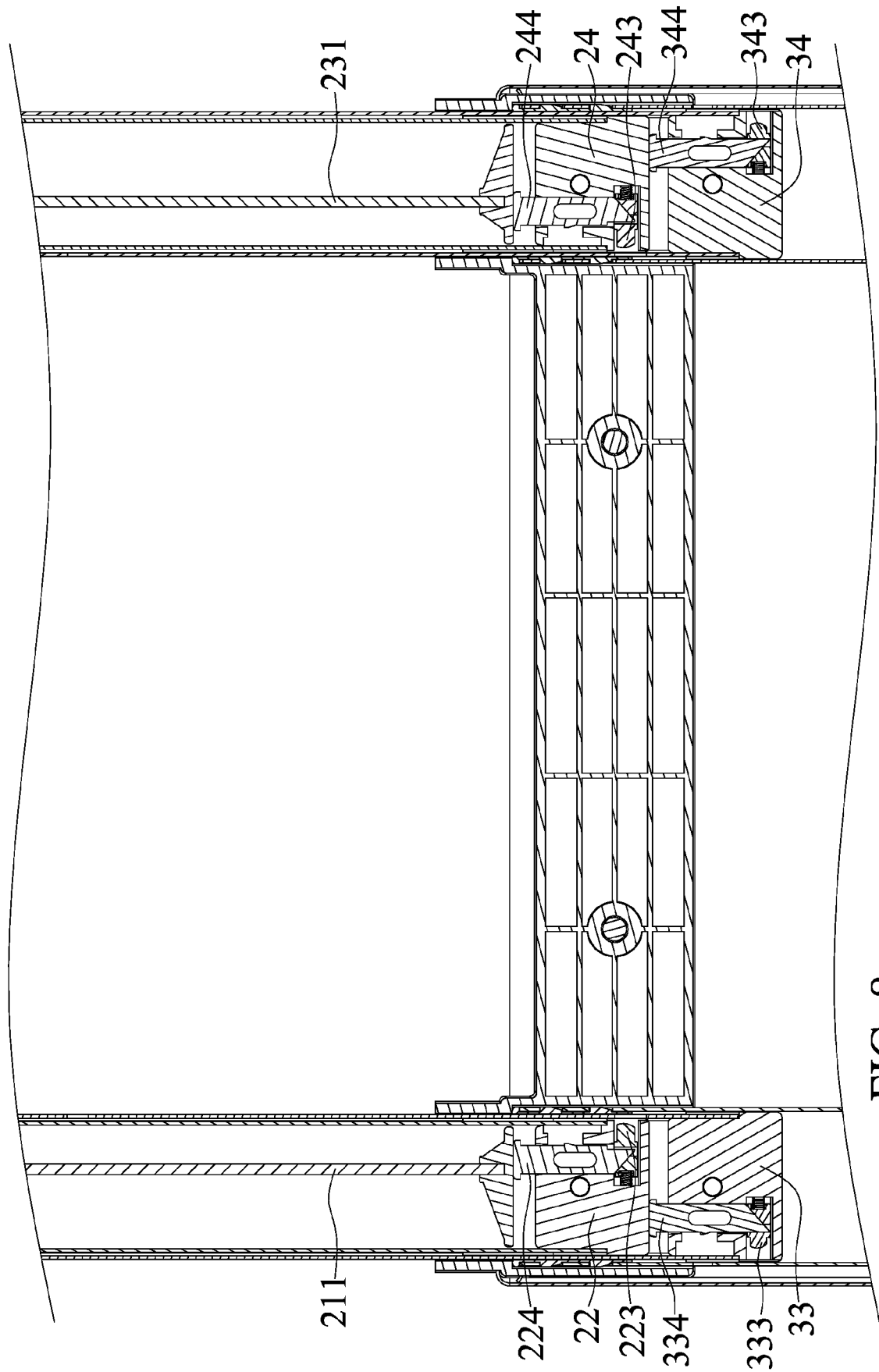


FIG. 8

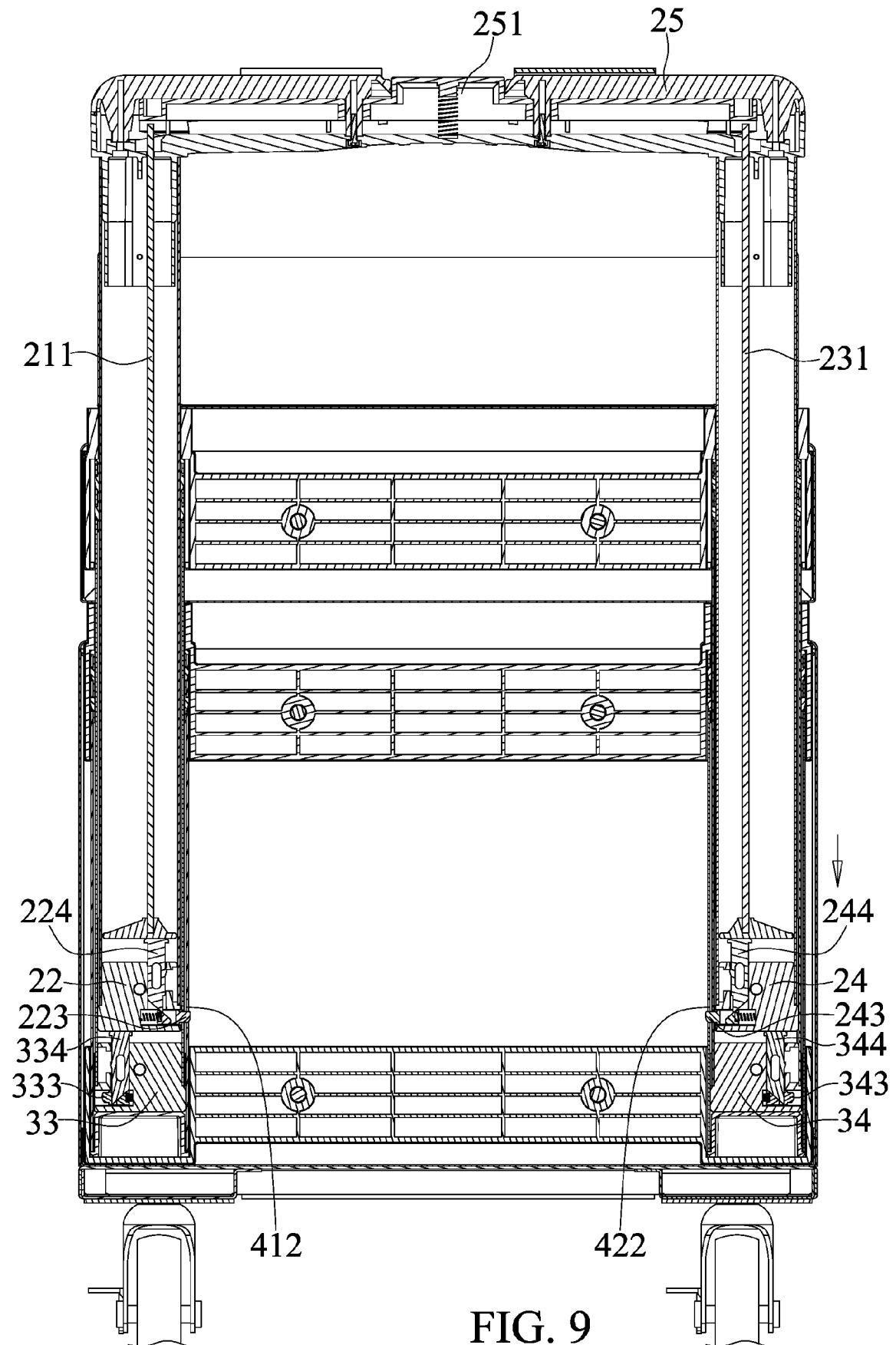
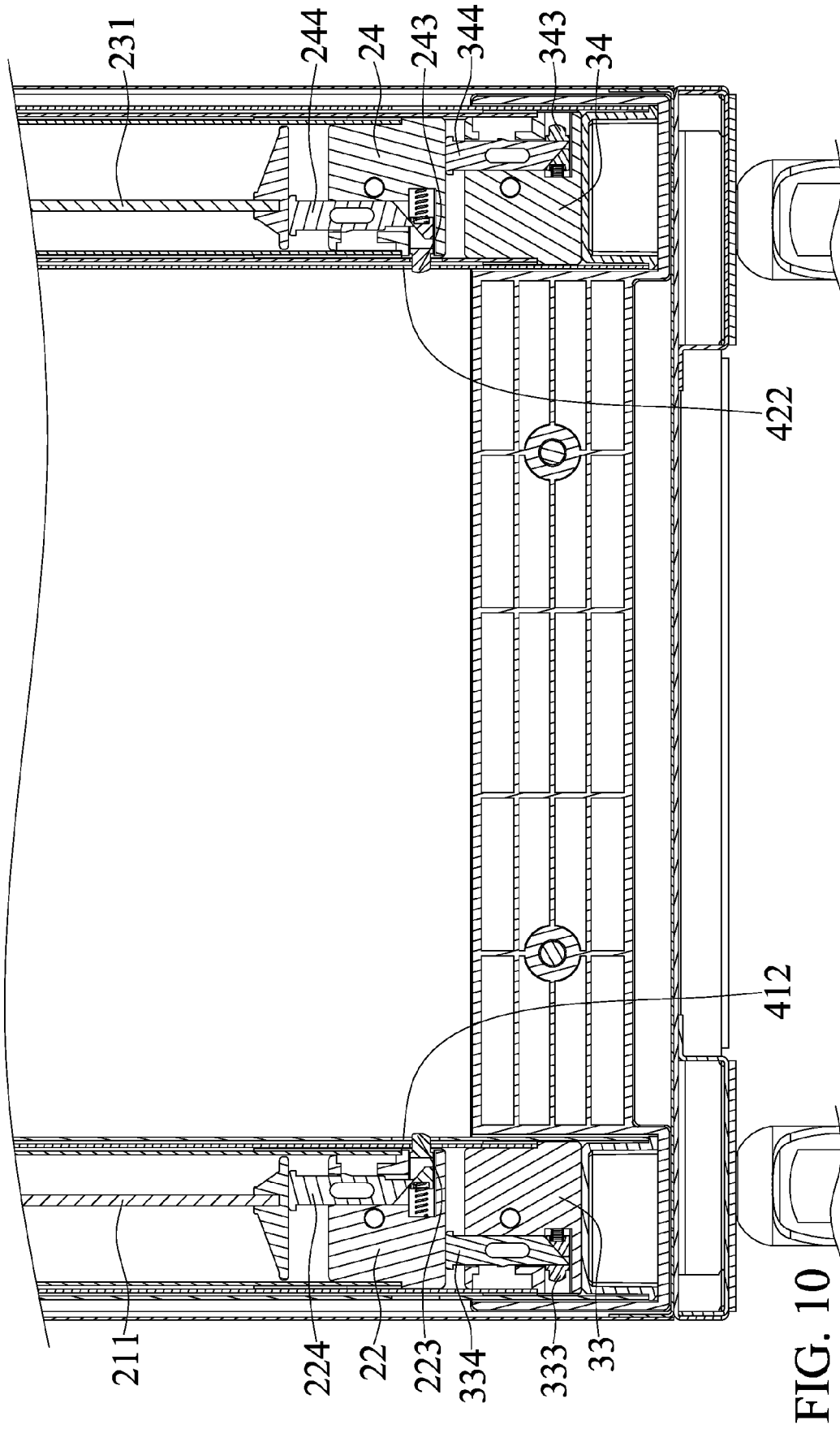


FIG. 9



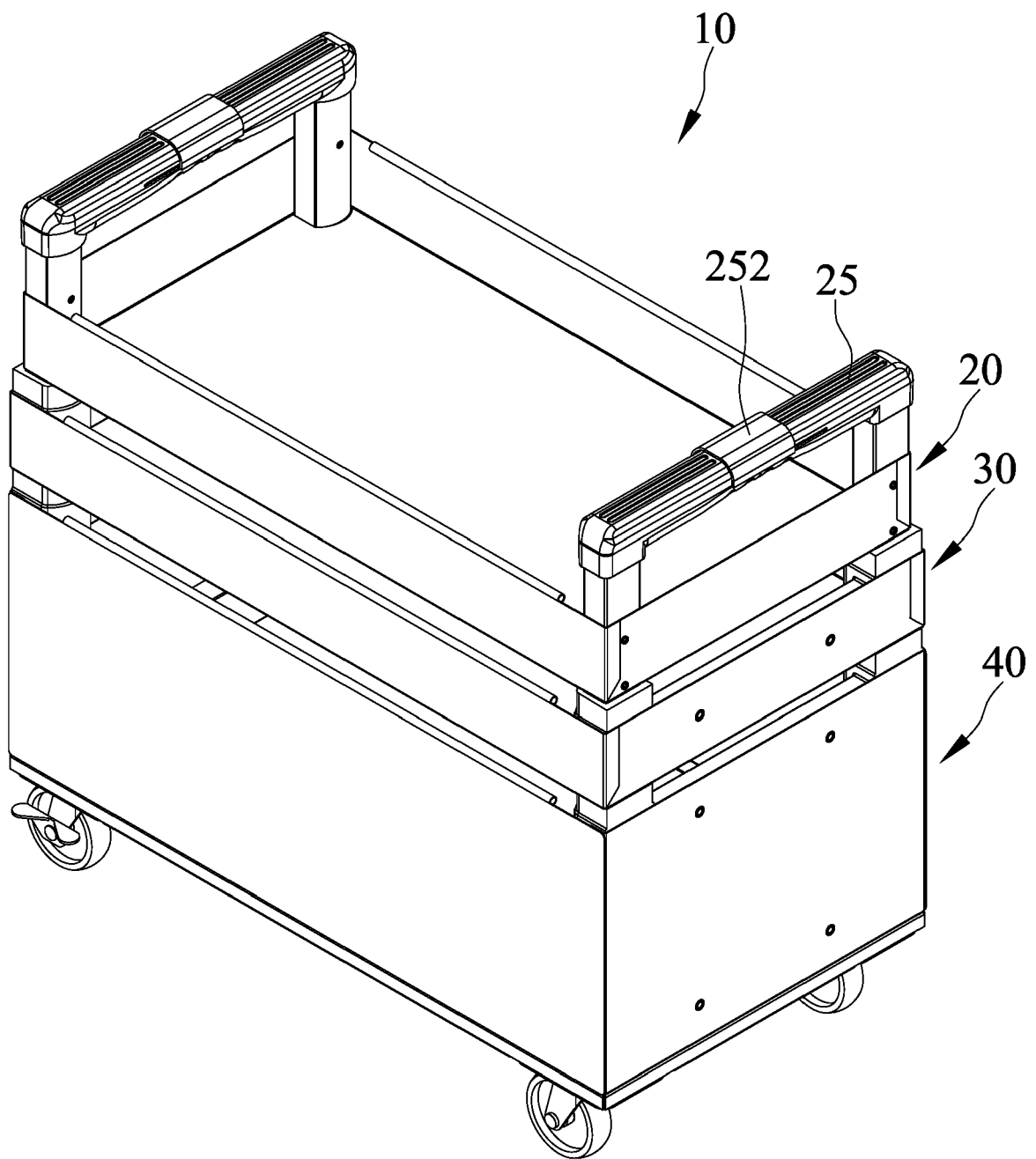


FIG. 11



EUROPEAN SEARCH REPORT

Application Number
EP 18 16 7722

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A	US 6 047 750 A (JENSEN STEVEN M [US]) 11 April 2000 (2000-04-11) * column 3, line 55 - column 6, line 16 *	1-14	
A	DE 28 10 401 A1 (WUERTH ADOLF SCHRAUBEN) 13 September 1979 (1979-09-13) * page 15 - page 20 *	1-14	
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			TECHNICAL FIELDS SEARCHED (IPC)
			B25H
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 22 November 2018	Examiner Gerard, Olivier
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