

(19)



(11)

EP 4 825 245 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.10.2026 Bulletin 2026/43

(51) International Patent Classification (IPC):
A44B 11/26^(2006.01)

(21) Application number: **25199296.2**

(52) Cooperative Patent Classification (CPC):
A44B 11/266; A44D 2203/00

(22) Date of filing: **01.09.2025**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
NO PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA
Designated Validation States:
GE KH LA MA MD TN

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(30) Priority: **18.04.2025 CN 202520740120 U**

(54) **MAGNETIC SIDE RELEASE BUCKLE**

(57) A magnetic side release buckle includes a female buckle and a male buckle that can be attached and fastened together. The female buckle includes a housing, an upper cover, a magnetic attraction member, a button assembly, and a mounting cavity, a movable locking assembly is arranged in the mounting cavity, the locking assembly partially protrudes out of the mounting cavity to lock the male buckle, the locking assembly is linked to the button assembly, the button

assembly pushes the locking assembly to move to release locking of the male buckle, and the locking assembly moves to be reset through resilience of the locking assembly. The locking assembly moves along an inner wall of the mounting cavity all the time, such that stability of the locking assembly during movement is improved, and the locking assembly is not easy to shake.

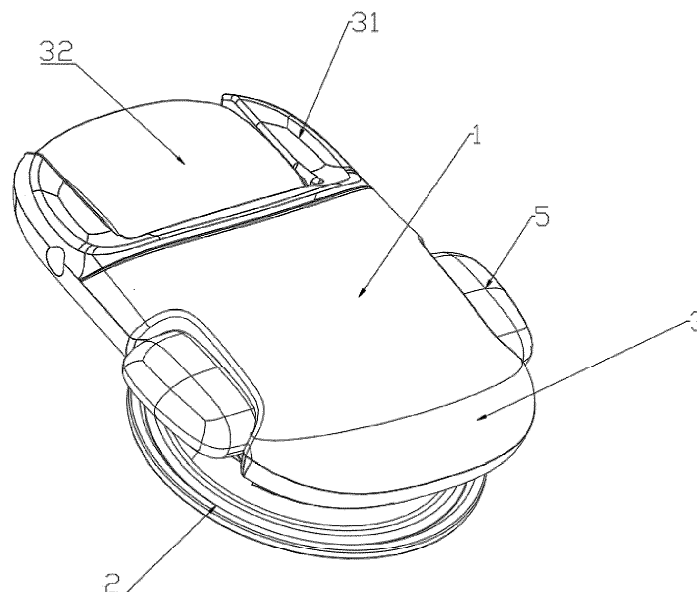


FIG. 1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of connecting buckle members, and particularly relates to a magnetic side release buckle.

BACKGROUND

[0002] Some parts of backpacks, straps, child safety seats and baby carriers with hip seats generally need to be connected or maintained in a certain state through fasteners, and their buckles generally need to be quickly and conveniently untied. For instance, baby carriers with hip seats or straps often need to be tied and untied during use, which can be implemented through its buckle. Common buckles usually include male buckles and female buckles, and their connection is achieved through magnetic fastening of the male buckles and the female buckles.

[0003] An existing magnetic attraction buckle is provided with magnets on its male buckle and its female buckle respectively. The two magnets are attracted to each other through mutual magnetic attraction force. However, the force may be insufficient, which may lead to separation during use. Thus, it is necessary to further increase connection strength through addition of a side release buckle structure, and the side release buckle structure is generally unlocked through buttons. Stability of the existing side release buckle structure is relatively poor, and the side release buckle structure or buttons may shake or shift during use, resulting in relatively low product quality.

SUMMARY

[0004] In order to overcome the defects in the prior art, the present disclosure provides a magnetic side release buckle. To solve the technical problems, the present disclosure provides the technical solution as follows:

A magnetic side release buckle includes a female buckle and a male buckle capable of being attached and fastened together. The female buckle includes a housing, an upper cover matched with the housing, and a magnetic attraction member and a button assembly that are arranged in the housing. The female buckle further includes a mounting cavity having one end located in the housing and the other end protruding from a bottom of the housing. A movable locking assembly is arranged in the mounting cavity. The locking assembly partially protrudes out of the mounting cavity to lock the male buckle. The locking assembly is linked to the button assembly. The button assembly pushes the locking assembly to move to release locking of the male buckle. The locking assembly moves to be reset through resilience of the locking assembly.

[0005] Further, the locking assembly includes a first locking member and a second locking member disposed on opposite sides and a central plate disposed at a top. Elastic tabs are arranged at tops of the first locking member and the second locking member, and the elastic tabs extend upward to be connected to two ends of the central plate respectively. The first locking member and the second locking member are capable of moving transversely through the elastic tabs. A cavity for movement is formed between the first locking member and the second locking member. The first locking member and the second locking member move along an inner wall of the mounting cavity. Further, two sides of the mounting cavity are provided with through holes. The first locking member and the second locking member are provided with locking tongues that penetrate the through holes at the two sides respectively. The locking tongues are engaged with the male buckle to achieve locking. The first locking member and the second locking member at the two sides are pressed to drive the locking tongues to retract into the mounting cavity to achieve unlocking.

[0006] Further, the button assembly includes a first button and a second button disposed on opposite sides of the housing and an elastic member supported between the first button and the second button. Two sides of the housing are provided with button cavities. The first button and the second button are movably mounted in the button cavities. Outer ends of the first button and the second button protrude outward from the button cavities.

[0007] Further, inner sides of the first button and the second button are provided with sliding blocks extending into the housing. The housing is internally provided with sliding recesses configured to match the sliding blocks. The sliding blocks slide in the sliding recesses during movement of the first button and the second button. Two sides of the first button and the second button are provided with protruding stop blocks.

[0008] Further, the housing is internally provided with an assembly recess. The assembly recess is formed at an outer edge of the mounting cavity. The magnetic attraction member is mounted in the assembly recess.

[0009] Further, a lower end of the male buckle is provided with an annular mounting recess. The mounting recess is internally provided with a magnetic counterpart. The magnetic attraction member and the magnetic counterpart are magnetically attracted when the male buckle and the female buckle are fastened together.

[0010] Further, the male buckle is provided with a mounting hole configured to match an outer contour of the mounting cavity. An inner wall of the mounting hole is provided with a protruding limiting step. The locking tongues abut against the limiting step to achieve locking. Upper ends of the locking tongues are provided with guiding surfaces. An upper end of the limiting step is provided with a guide surface.

[0011] Further, the bottom of the housing is provided with a male buckle mounting recess configured to match an outer contour of the male buckle. The male buckle is mounted in the male buckle mounting recess when the male buckle and the female buckle are fastened together. An outer wall of the male buckle and an inner wall of the male buckle mounting recess are inclined surfaces attached to each other.

[0012] Further, one end of the housing is provided with a mounting portion through which a webbing strap penetrates. A flip-open cover plate is arranged on the mounting portion.

[0013] Compared with the prior art, the present disclosure has the beneficial effects:

The female buckle of the present disclosure includes the housing, the upper cover matched with the housing, and the magnetic attraction member and the button assembly that are arranged in the housing. The female buckle further includes the mounting cavity having one end located in the housing and the other end protruding from the bottom of the housing. The movable locking assembly is arranged in the mounting cavity. The locking assembly is linked to the button assembly.

[0014] The buttons are pressed to drive the locking assembly to move to release locking of the male buckle, and to move so as to be reset through resilience of the locking assembly. The locking assembly of the design is splayed, and is unlocked or locked through a physical structure of the locking assembly. Compared with traditional resilience motion through a spring, the design requires less force to generate movement for unlocking. In this way, when the male buckle and the female buckle are assembled, it is not necessary to press the buttons at the two sides, and the locking assembly may be pushed for unlocking through magnetic-attraction guidance. The locking assembly is reset through resilience after buckling is completed. The design is convenient to operate and convenient to use.

[0015] The mounting cavity wraps an outer contour of the locking assembly, and the locking assembly moves along an inner contour of the mounting cavity all the time. In this way, the locking assembly may only move transversely along a set pressing trajectory, and is constrained by the mounting cavity when the locking assembly is about to shake longitudinally. Thus, moving stability is greatly increased, shaking is unlikely to occur, and excellent quality of products is ensured.

[0016] The male buckle and the female buckle are mounted stably. The mounting cavity and the mounting hole are assembled to form first transverse limiting, and the outer contour of the male buckle and the male buckle mounting recess are assembled to form second transverse limiting. The outer wall of the male buckle and the inner wall of the male buckle mounting recess are the inclined surfaces attached to each other with a larger contact area. In this way, stability of the female buckle and the male buckle after buckling is greatly

increased, and shaking is unlikely to occur.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

FIG. 1 is a first perspective view of the present disclosure.

FIG. 2 is a cutaway view of the present disclosure.

FIG. 3 is a second perspective view of the present disclosure.

FIG. 4 is a perspective view of a locking assembly of the present disclosure.

FIG. 5 is a third perspective view of the present disclosure.

FIG. 6 is an exploded view of the present disclosure.

[0018] Reference numerals: 1, female buckle; 2, male buckle; 3, housing; 4, upper cover; 5, button assembly; 6, magnetic attraction member; 7, mounting cavity; 8, locking assembly; 9, first button; 10, second button; 11, elastic member; 12, button cavity; 13, sliding block; 14, sliding recess; 15, stop block; 16, first locking member; 17, second locking member; 18, central plate; 19, elastic tab; 20, cavity; 21, through hole; 22, locking tongue; 23, guiding part; 24, assembly recess; 25, mounting recess; 26, attraction member; 27, mounting hole; 28, limiting step; 29, bottom sheet; 30, male buckle mounting recess; 31, mounting portion; and 32, cover plate.

DETAILED DESCRIPTION OF EMBODIMENTS

[0019] Technical solutions in examples of the present disclosure will be clearly and completely described below with reference to the accompanying drawings in the examples of the present disclosure. Obviously, the examples described are merely some examples rather than all examples of the present disclosure. Based on the examples of the present disclosure, all the other examples obtained by those of ordinary skill in the art without any creative effort fall within the protection scope of the present disclosure.

[0020] As shown in FIG. 1 to FIG. 6, a magnetic side release buckle includes a female buckle 1 and a male buckle 2 that are capable of being fastened together. The male buckle 2 is used for being mounted on a backpack, a baby sling and a child seat. The female buckle 1 is buckled and fixed vertically onto the male buckle 2 in a magnetic attraction manner. The female buckle 1 includes a housing 3, an upper cover 4 matched with the housing 3, and a magnetic attraction member 6 and a button assembly 5 that are arranged in the housing 3. The female buckle further includes a mounting cavity 7 having one end located in the housing 3 and the other end protruding from a bottom of the housing 3. A movable locking assembly 8 is arranged

in the mounting cavity 7. The locking assembly 8 partially protrudes out of the mounting cavity 7 to lock the male buckle 2. The locking assembly 8 is splayed. The locking assembly 8 is linked to the button assembly 5. The button assembly 5 presses the locking assembly 8 from two sides to move to release locking of the male buckle 2. The mounting cavity 7 wraps an outer contour of the locking assembly 8, and the locking assembly 8 moves along an inner contour of the mounting cavity 7 all the time. In this way, the locking assembly may only move transversely along a set pressing trajectory, and is constrained by the mounting cavity 7 when the locking assembly is about to shake longitudinally. Thus, moving stability of the locking assembly 8 is greatly increased, shaking is unlikely to occur, and excellent quality of products is ensured.

[0021] The locking assembly 8 includes a first locking member 16 and a second locking member 17 disposed on opposite sides and a central plate 18 disposed at a top. Elastic tabs 19 are arranged at centers of tops of the first locking member 16 and the second locking member 17, and the elastic tabs extend upward to be connected to two ends of the central plate 18 respectively. The central plate 18 remains stationary. The first locking member 16 and the second locking member 17 are capable of moving transversely to release locking of the male buckle 2 through the elastic tabs 19. A width and a thickness of the elastic tabs 19 are less than widths and thicknesses of the first locking member 16 and the second locking member 17. The first locking member 16 and the second locking member 17 may move transversely only through slight application of external force. The first locking member 16, the second locking member 17, the central plate 18 and the elastic tabs 19 are integrally formed, such that unnecessary assembly is avoided, and connection strength is great.

[0022] A cavity 20 for movement is formed between the first locking member 16 and the second locking member 17. When the button assembly 5 is pressed from two sides, the first locking member 16 and the second locking member 17 are pushed to move in the cavity 20 and gradually move close to each other. After the button assembly is released, the first locking member 16 and the second locking member 17 are reset through resilience of the elastic tabs 19, and then move along two ends of an inner wall of the mounting cavity 7.

[0023] Two sides of the mounting cavity 7 are provided with through holes 21. The first locking member 16 and the second locking member 17 are provided with locking tongues 22 that penetrate the through holes 21 at the two sides respectively. The locking tongues 22 are engaged with the male buckle 2 to achieve locking. The first locking member 16 and the second locking member 17 at the two sides are pressed to drive the locking tongues to retract into the mounting cavity 7 to achieve unlocking.

[0024] In a normal state, the locking assembly 8 is in

a locked state. The first locking member 16 and the second locking member 17 are attached to the two ends of the inner wall of the mounting cavity 7 respectively. The locking tongues 22 penetrate the through holes. When the female buckle 1 and the male buckle need to be fastened, the female buckle 1 is placed above the male buckle 2. The mounting cavity 7 is to be moved into the male buckle 2. Guided by magnetic attraction, the male buckle 2 may push open the locking tongues 22 protruding from the two sides of the mounting cavity 7, and the first locking member 16 and the second locking member 17 move synchronously with the locking tongues 22. When the male buckle 2 and the female buckle 1 are fastened and attracted, the locking assembly 8 is moved into the male buckle 2 so as to achieve locking through resilience of the locking assembly and penetration of the locking tongues 22 through the through holes 21. The locking assembly in the solution has the advantages that the locking assembly moves to be unlocked through elastic force of the locking assembly. The button assembly 5 does not need to be pressed to push the locking tongues 22 into the mounting cavity 7 when the male buckle 2 and the female buckle 1 are fastened, and the locking tongues 22 may be pushed into the mounting cavity 7 only through magnetic attraction force. Thus, user's operation is facilitated.

[0025] Outer sides of the locking tongues 22 are provided with inclined guiding parts 23. The guiding parts 23 are inclined surfaces. In a process of fastening the male buckle 2 and the female buckle 1, the guiding parts 23 may achieve an assistance effect. In this way, the male buckle 2 may push open the locking tongues 22 more easily along the guiding parts 23 so as to be assembled with the female buckle 1, which facilitates assembly of a user.

[0026] The button assembly 5 includes a first button 9 and a second button 10 disposed on opposite sides of the housing 3, and an elastic member 11 supported between the first button 9 and the second button 10. The elastic member 11 is integrated with the first button 9 and the second button 10. The first button 9 and the second button 10 are reset through resilience of the elastic member 11 after being pressed.

[0027] The two sides of the housing 3 are provided with button cavities 12. The first button 9 and the second button 10 are mounted in the button cavities 12, and outer ends of the first button and the second button protrude outward from the button cavities 12 so as to allow a user to press. During movement, the first button 9 and the second button 10 may only move in the button cavities 12. When the first button and the second button are pressed to a certain extent, the first button and the second button touch ends of the button cavities 12, such that maximum pressing distances of the first button 9 and the second button 10 are limited, and damage caused by excessive pressing is prevented.

[0028] Inner sides of the first button 9 and the second

button 10 are provided with sliding blocks 13 extending into the housing 3. The housing 3 is internally provided with sliding recesses 14 configured to match the sliding blocks 13. The first button 9 and the second button 10 are pressed to drive the sliding blocks 13 to slide in the sliding recesses 14, such that pressing is made smoother, and pressing feel is improved. Meanwhile, a positioning effect is achieved, further stability of button movement is improved, and the buttons are unlikely to shift and shake.

[0029] Two sides of the first button 9 and the second button 10 are provided with stop blocks 15, and the stop blocks 15 are stuck in the button cavities 12 to prevent the first button 9 and the second button 10 from falling off.

[0030] In daily use, touching a button at one side of an existing connection buckle by mistake may cause falling of the male buckle and the female buckle. With the structure, when the button at any side is pressed, the locking tongue 22 at only one side may be moved, and the male buckle 2 and the female buckle 1 cannot be unlocked. Only when the first button 9 and the second button 10 are pressed simultaneously can they be unlocked. Thus, falling due to touching by mistake by a user can be avoided in daily use, and product use stability and better user experience can be ensured. The side release buckle is used for baby slings, which can greatly ensure babies' safety.

[0031] The housing 3 is internally provided with an assembly recess 24. The assembly recess 24 is formed at an outer edge of the mounting cavity 7. The magnetic attraction member 6 includes an annular magnet and is mounted in the assembly recess 24.

[0032] A lower end of the male buckle 2 is provided with an annular mounting recess 25. The mounting recess 25 corresponds to the assembly recess 24 in the housing 3. The mounting recess 25 is internally provided with a magnetic counterpart 26. The magnetic counterpart 26 includes an annular metal member and an annular magnet. The magnetic attraction member 6 and the magnetic counterpart 26 are attracted to each other when the male buckle 2 and the female buckle 1 are fastened together. The annular design achieves attraction at all angles, and increases an attraction area between the magnetic attraction member 6 and the magnetic counterpart 26. Thus, attraction force between the female buckle 1 and the male buckle 2 is enhanced, and buckling can be better implemented even if operation is not performed in place by younger users or adults.

[0033] The male buckle 2 is provided with a circular mounting hole 27 configured to match the outer contour of the mounting cavity 7. An inner wall of the mounting hole 27 is provided with a protruding limiting step 28. The locking tongues 22 abut against the limiting step 28 to achieve longitudinal locking, and the female buckle 1 cannot be removed upward. The mounting cavity 7 is engaged with the mounting hole 27 to

achieve transverse limiting, and the female buckle 1 cannot shake transversely.

[0034] A bottom of the male buckle 2 is provided with a bottom sheet 29 used for sealing the mounting recess 25. After the magnetic counterpart 26 is mounted in the mounting recess 25, the bottom sheet 29 is mounted in a buckling manner, and the bottom sheet 29 also seals a bottom of the mounting hole 27. In this way, the situation that when the male buckle 2 is sewn to the objects such as straps and backpacks, fabric protrusions are engaged with the mounting hole 27 and embedding of the mounting cavity 7 is influenced is avoided.

[0035] The bottom of the housing 3 is provided with a male buckle mounting recess 30 configured to match an outer contour of the male buckle 2. The male buckle 2 is mounted in the male buckle mounting recess 30 when the male buckle 2 and the female buckle 1 are fastened together. The male buckle 2 and the female buckle 1 are mounted stably. The mounting cavity 7 and the mounting hole 27 are assembled to form first transverse limiting, and the outer contour of the male buckle 2 and the male buckle mounting recess 30 are assembled to form second transverse limiting. The outer wall of the male buckle 2 and the inner wall of the male buckle mounting recess 30 are the inclined surfaces attached to each other with a larger contact area. In this way, stability of the female buckle 1 and the male buckle 2 after buckling is greatly increased, and shaking is unlikely to occur.

[0036] The male buckle 2 includes an annular male buckle, which solves a problem that the buckle can only be fastened at a fixed angle or cannot be fastened at an inclined angle.

[0037] One end of the housing 3 is provided with a mounting portion 31 through which a webbing strap penetrates. The mounting portion 31 is provided with a cover plate 32. The cover plate is rotatably connected to the housing 3 through shaft connection, and the cover plate 32 may be rotated to be closed after penetration of the webbing strap, such that the webbing strap is clamped tightly, and the webbing strap is prevented from loosening.

[0038] For those skilled in the art, it is apparent that the present disclosure is not limited to details of illustrative examples, and the present disclosure can be implemented in other specific forms without departing from the spirit or basic features of the present disclosure. Thus, no matter from which point of view, the examples should all be regarded as illustrative and non-limiting. The scope of the present disclosure is defined by the appended claims rather than the above description, and therefore it is intended that all changes that fall within the meaning and scope of equivalency of the claims are embraced in the present disclosure, and any reference numbers in the claims should not be regarded as limiting the claims involved.

Claims

1. A magnetic side release buckle, **characterized by** comprising a female buckle and a male buckle capable of being attached and fastened together, wherein the female buckle comprises a housing, an upper cover matched with the housing, and a magnetic attraction member and a button assembly that are arranged in the housing; the female buckle further comprises a mounting cavity having one end located in the housing and the other end protruding from a bottom of the housing; a movable locking assembly is arranged in the mounting cavity, and the locking assembly partially protrudes out of the mounting cavity to lock the male buckle; and the locking assembly is linked to the button assembly, the button assembly pushes the locking assembly to move to release locking of the male buckle, and the locking assembly moves to be reset through resilience of the locking assembly.
2. The magnetic side release buckle according to claim 1, **characterized in that** the locking assembly comprises a first locking member and a second locking member disposed on opposite sides and a central plate disposed at a top, elastic tabs are arranged at tops of the first locking member and the second locking member, the elastic tabs extend upward to be connected to two ends of the central plate respectively, and the first locking member and the second locking member are capable of moving transversely through the elastic tabs; and a cavity for movement is formed between the first locking member and the second locking member, and the first locking member and the second locking member move along an inner wall of the mounting cavity.
3. The magnetic side release buckle according to claim 2, **characterized in that** two sides of the mounting cavity are provided with through holes, the first locking member and the second locking member are provided with locking tongues that penetrate the through holes at the two sides respectively, the locking tongues are engaged with the male buckle to achieve locking, and the first locking member and the second locking member at the two sides are pressed to drive the locking tongues to retract into the mounting cavity to achieve unlocking.
4. The magnetic side release buckle according to claim 1, **characterized in that** the button assembly comprises a first button and a second button disposed on opposite sides of the housing, and an elastic member supported between the first button and the second button, two sides of the housing are provided with button cavities, the first button and the second button are movably mounted in the button cavities, and outer ends of the first button and the second button protrude outward from the button cavities.
5. The magnetic side release buckle according to claim 4, **characterized in that** inner sides of the first button and the second button are provided with sliding blocks extending into the housing, the housing is internally provided with sliding recesses configured to match the sliding blocks, and the sliding blocks slide in the sliding recesses during movement of the first button and the second button; and two sides of the first button and the second button are provided with protruding stop blocks.
6. The magnetic side release buckle according to claim 1, **characterized in that** the housing is internally provided with an assembly recess; and the assembly recess is formed at an outer edge of the mounting cavity, and the magnetic attraction member is mounted in the assembly recess.
7. The magnetic side release buckle according to claim 1, **characterized in that** a lower end of the male buckle is provided with an annular mounting recess; and the mounting recess is internally provided with a magnetic counterpart, and the magnetic attraction member and the magnetic counterpart are magnetically attracted when the male buckle and the female buckle are fastened together.
8. The magnetic side release buckle according to claim 3, **characterized in that** the male buckle is provided with a mounting hole configured to match an outer contour of the mounting cavity, an inner wall of the mounting hole is provided with a protruding limiting step, the locking tongues abut against the limiting step to achieve locking, upper ends of the locking tongues are provided with guiding surfaces, and an upper end of the limiting step is provided with a guide surface.
9. The magnetic side release buckle according to claim 1, **characterized in that** the bottom of the housing is provided with a male buckle mounting recess configured to match an outer contour of the male buckle, the male buckle is mounted in the male buckle mounting recess when the male buckle and the female buckle are fastened together, and an outer wall of the male buckle and an inner wall of the male buckle mounting recess are inclined surfaces attached to each other.
10. The magnetic side release buckle according to claim 1, **characterized in that** one end of the housing is provided with a mounting portion

through which a webbing strap penetrates, and a flip-open cover plate is arranged on the mounting portion.

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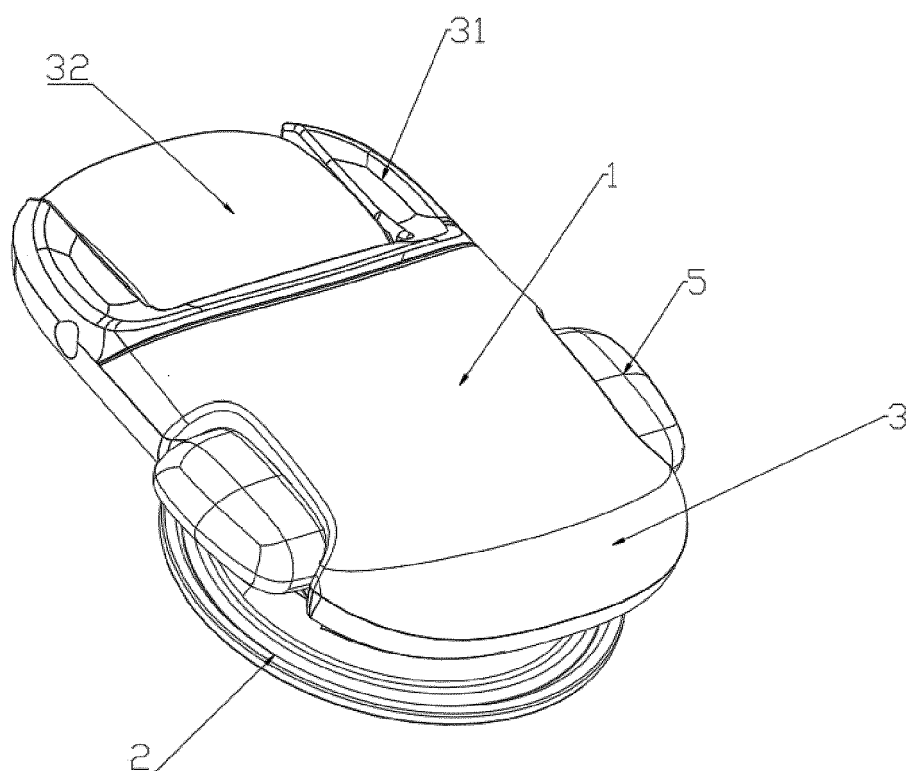


FIG. 1

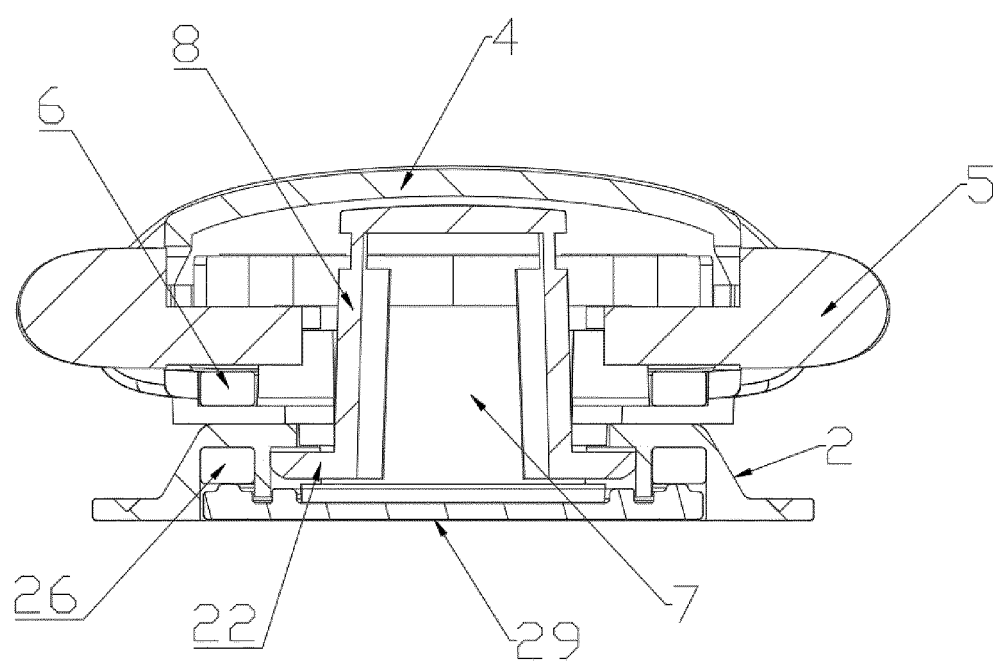


FIG. 2

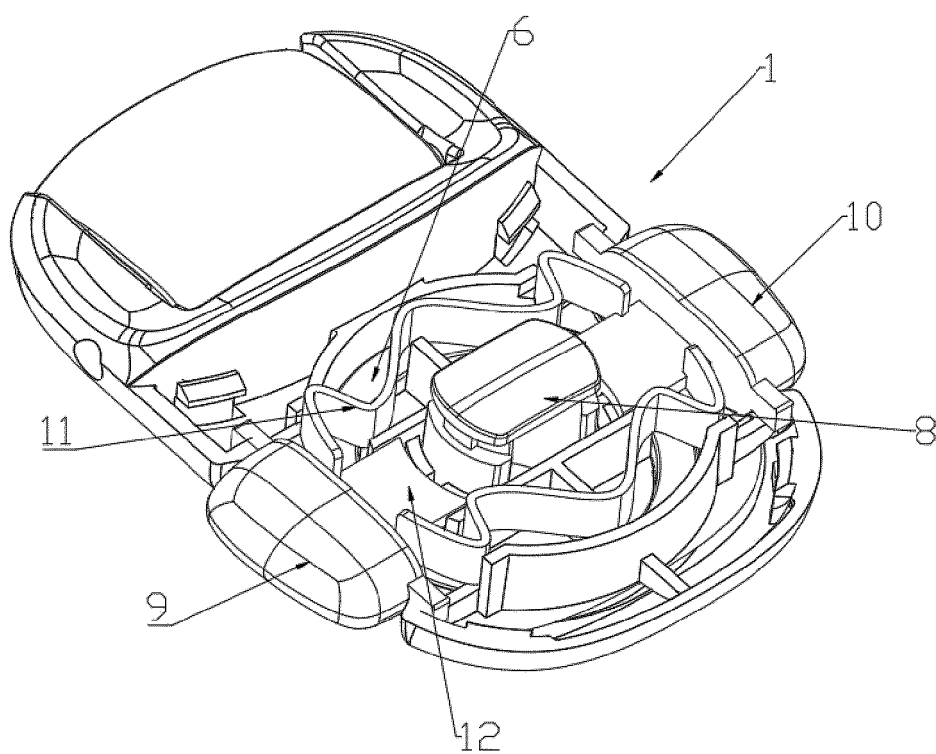


FIG. 3

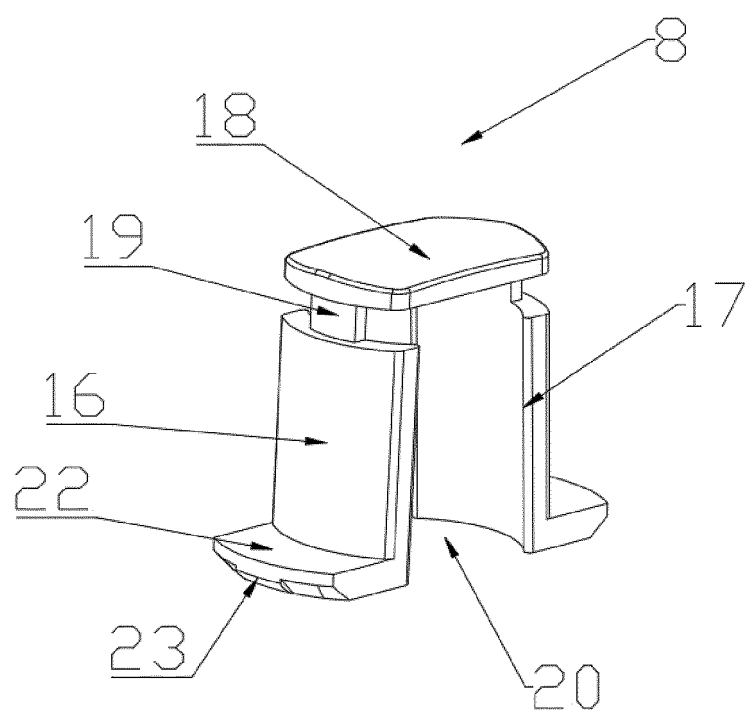


FIG. 4

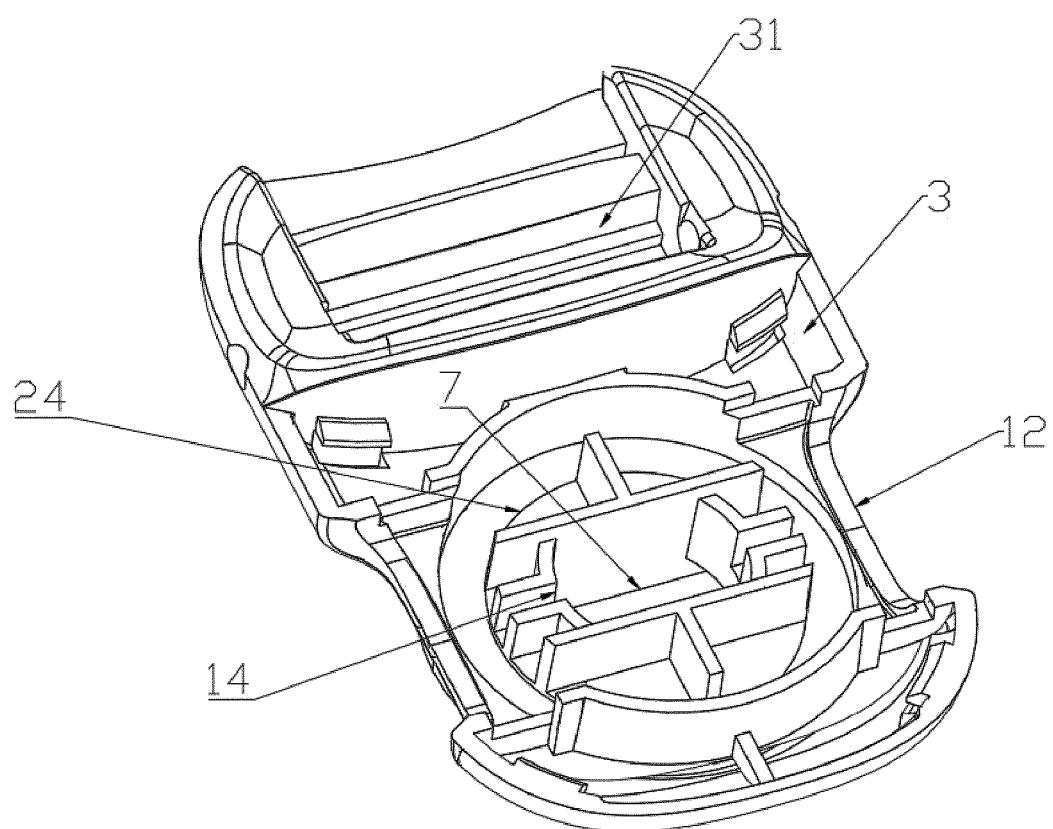


FIG. 5

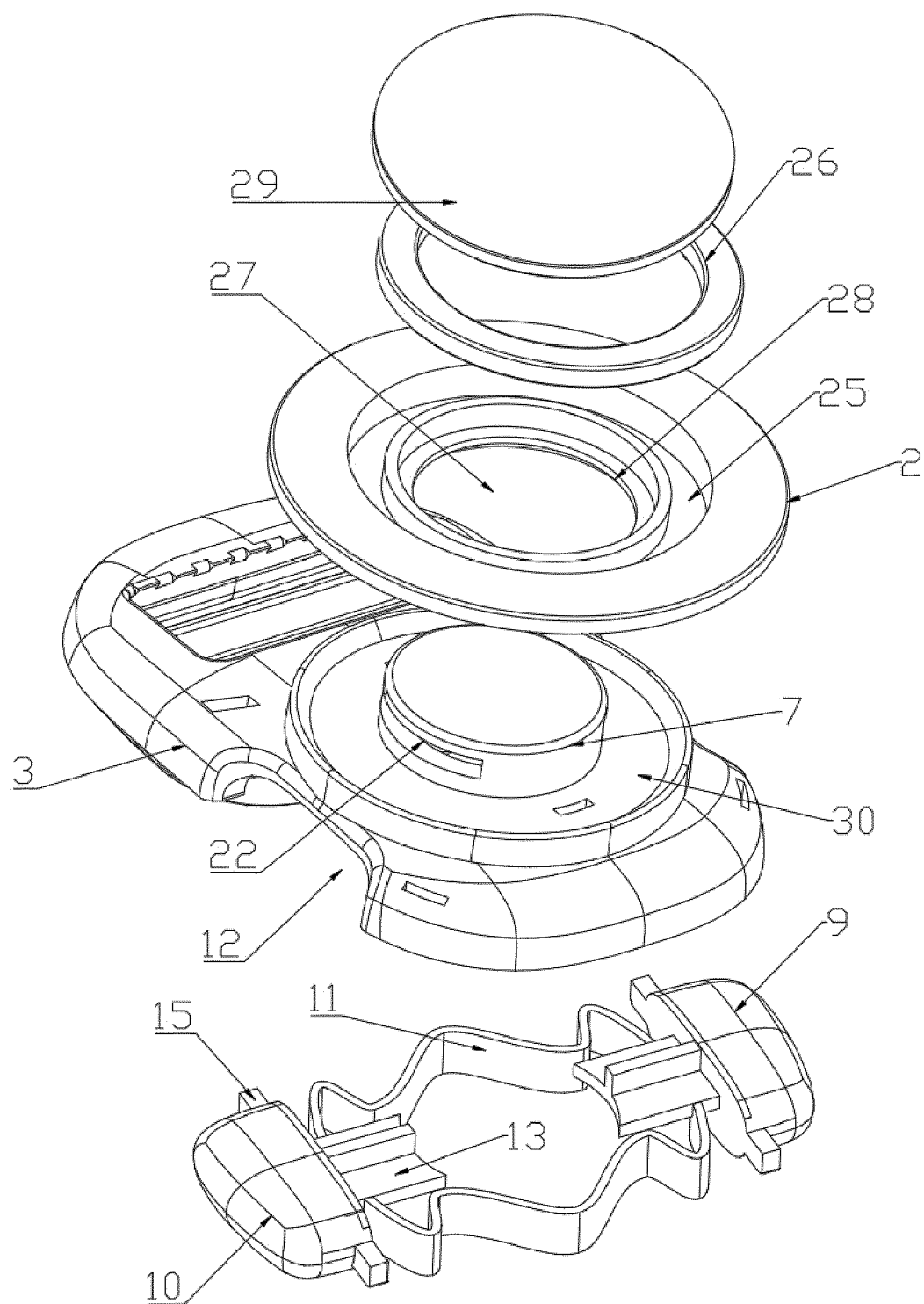


FIG. 6



EUROPEAN SEARCH REPORT

Application Number

EP 25 19 9296

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		21 January 2026	Gallego, Adoración
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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