(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
27 September 2012 (27.09.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/127847 A1

(51) International Patent Classification:
A47F 1/12 (2006.01)

(21) International Application Number:
PCT/JP2012/001884

(22) International Filing Date:
19 March 2012 (19.03.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2011-063348 22 March 2011 (22.03.2011) JP
2011-063357 22 March 2011 (22.03.2011) JP

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

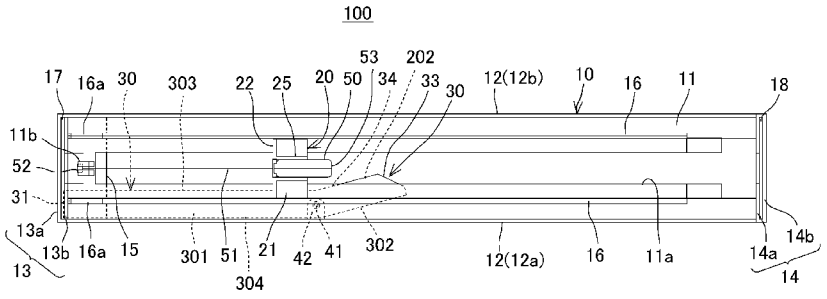
Published:

— *with international search report (Art. 21(3))*

(54) **Title**: DISPENSING UNIT

[Fig. 1]

FIG.1



(57) **Abstract**: A magazine (100) includes a mount portion (10) on which cigarette commodities (60) are mounted in a line in a front-back direction. The magazine (100) includes a push plate (20) which is arranged to be moved frontward and backward along the mount portion (10) and which moves remaining commodities frontward when the frontmost cigarette commodity (60a) is pulled out from the mount portion (10) by urging a back face of the backmost cigarette commodity (60b). The magazine (100) includes a swing member (30) being a moving portion which is arranged to be movable against the mount portion (10) as being driven by the push plate (20). The magazine (100) includes a remaining number display portion (31). The remaining number display portion (31) displays and notifies that the number of the commodities becomes equal to a predetermined number (N) or smaller by being moved from a retreat position to a display position when the push plate (20) moved frontward arrives at a predetermined proceeding position in the front-back direction.

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Description

Title of Invention: DISPENSING UNIT

Technical Field

[0001] The present invention relates to a magazine on which a plurality of commodities is mounted in a line in the front-back direction, and in particular, relates to a magazine which notifies with displaying of the remaining number of commodities.

Background Art

[0002] A variety of commodities is displayed at so-called fittings (commodity display cabinets) in stores such as convenience stores.

[0003] In general, a fitting for displaying specific commodities such as cigarette commodities, for example, among the variety of commodities is placed on a registration counter or in the vicinity thereof where a sales processing device such as an electronic cash register is placed.

[0004] The "cigarette commodities" mentioned here means not a cigarette which is actually smoked but a rectangular solid package which accommodates a plurality of cigarettes.

[0005] For example, a plurality of containers called magazines and the like is installed on shelves of a fitting and each magazine is capable of mounting a plurality of commodities.

[0006] Here, since appropriate replenishment of commodities is required when the remaining number of the commodities mounted on the magazine is decreased, a technology to perform remaining number displaying of commodities mounted on a mount portion of a magazine has been desired.

[0007] In Patent Literature 1, there has been disclosed a magazine (a commodity feeding unit in the literature) having a mount portion (a mount base in the literature) on which a plurality of commodities is mounted in a line in the front-back direction. The magazine includes a push plate (a push body in the literature) and a plate spring. The push plate urges a back face of the backmost commodity frontward and moves the rest of commodities frontward when the frontmost commodity is pulled out from the magazine. The plate spring is shaped into a spiral shape of which top end can be pulled out. A spirally-shaped section of the plate spring is arranged below the mount portion and the top end of the plate spring pulled out from the spirally-shaped section is fixed to the push plate as passing through a front end part of the magazine and an upper face of the mount portion. With this structure, the push plate is urged frontward by the plate spring.

Displaying of the commodity remaining number is performed on the plate spring and a through-hole which enables to make the remaining number display of the plate spring

visible is formed at the front end of the magazine. Accordingly, the remaining number display corresponding to the remaining number of commodities on the mount portion can be confirmed through the through-hole.

Thus, according to the technology in the literature, the remaining number of commodities on the mount portion can be recognized by confirming the remaining number display through the through-hole.

Citation List

Patent Literature

[0008] [PTL 1] Japanese Examined Utility Model Application Publication NO. H07-36523

Summary of Invention

[0009] According to the technology of Patent Literature 1, the plate spring suffers warping owing to spring force thereof at a section between a section on which the remaining number display is performed and a section to which the push plate is fixed. The warping amount is decreased in accordance with deterioration of the plate spring.

On the contrary, distance between the push plate and the section on which certain remaining number display is performed (for example, displaying to indicate the remaining number being 2 pieces) is increased in accordance with deterioration of the plate spring (that is, in accordance with decrease of the warping amount). When the plate spring is deteriorated, there is a possibility that accurate recognition of the remaining number becomes difficult owing to deviation of the remaining number display from the through-hole or that mismatching between the actual remaining number and the remaining number display (that is, inaccurate notification of the remaining number) occurs.

For this reason, there has been desired to improve remaining number detection accuracy of a magazine.

[0010] The present invention provides a magazine capable of accurately detecting and informing that the remaining number of commodities mounted on a mount portion of a magazine becomes to a predetermined number or smaller.

[0011] The present invention provides a magazine including a mount portion on which a plurality of commodities is mounted in a line in a font-back direction, a push plate which is arranged to be moved frontward and backward along the mount portion, an urging member which urges the push plate frontward, and a moving portion which is arranged to be movable against the mount portion as being driven by the push plate urged by the urging member. Here, the moving portion includes a remaining number display portion which displays and notifies that the number of the commodities mounted on the mount portion becomes equal to a predetermined number N (N is a positive integer) or smaller, the remaining number display portion is moved between a

display position enabling to be visible from the outside of the magazine and a retreat position being different from the display position owing to movement of the moving portion, and the remaining number display portion is moved from the retreat position to the display position owing to arriving of the push plate is moved frontward to a predetermined proceeding position in the front-back direction.

[0012] According to the magazine, the push plate urges a back face of the backmost commodity frontward and moves the rest of commodities frontward when the frontmost commodity is pulled out from the mount portion. Accordingly, each time when the frontmost commodity is pulled out, the push plate is sequentially moved frontward in accordance therewith. The remaining number display portion is moved from the retreat position to the display position at the time when the proceeding push plate arrives at the predetermined proceeding position in the front-back direction. The timing of notification with displaying of the remaining number of commodities by the remaining number display portion is determined by the position of the push plate. Then, the position of the push plate is determined by a total front-back length of the remaining commodities. Hence, since the start timing of the notification with displaying of the remaining number accurately reflects the remaining number of commodities at the timing, it is possible to accurately detect and notify that the remaining number of the commodities mounted on the mount portion of the magazine becomes to the predetermined number.

[0013] According to the present invention, it is possible to accurately detect and inform that the remaining number of commodities accommodated on the mount portion of the magazine becomes to the predetermined number or smaller.

Brief Description of Drawings

[0014] The above and other objects, features and advantages will be further apparent from the following description of certain preferred embodiments and following drawings corresponding thereto.

[0015] [fig.1]This is a plane view of a magazine according to a first embodiment illustrating a state that a remaining number display portion is moved to a display position.

[fig.2]This is a side view of the magazine according to the first embodiment illustrating the state that the remaining number display portion is moved to the display position.

[fig.3]This is a rear view of the magazine according to the first embodiment illustrating the state that the remaining number display portion is moved to the display position.

[fig.4]This is a front view of the magazine according to the first embodiment illustrating the state that the remaining number display portion is moved to the display position.

[fig.5]This is a plane view of the magazine according to the first embodiment il-

lustrating a state that the remaining number display portion is moved to a retreat position.

[fig.6]This is a side view of the magazine according to the first embodiment illustrating the state that the remaining number display portion is moved to the retreat position.

[fig.7]This is a rear view of the magazine according to the first embodiment illustrating the state that the remaining number display portion is moved to the retreat position.

[fig.8]This is a front view of the magazine according to the first embodiment illustrating the state that the remaining number display portion is moved to the retreat position.

[fig.9]This is a plane view of the magazine according to the first embodiment illustrating a state of having a less number of remaining pieces than that in Fig. 2.

[fig.10]This is a sectional view on arrow A-A of Fig. 5.

[fig.11]Fig. 11A is a side view of a push plate of the magazine according to the first embodiment and Fig. 11B is a back view of the push plate of the magazine according to the first embodiment.

[fig.12]This is a side view of a reel of the magazine according to the first embodiment.

[fig.13]This is a plane view of a swing member of the magazine according to the first embodiment.

[fig.14]Fig. 14A is a plane view of a magazine according to a second embodiment in a state that a remaining number display portion is located at a retreat position and Fig. 14B is a plane view of the magazine according to the second embodiment in a state that the remaining number display portion is located at a display position.

[fig.15]Fig. 15A is an explanatory plane view for another example of the magazine according to the second embodiment in a state that the remaining number display portion is moved to the display position, Fig. 15B is a plane view illustrating a state that the remaining number display portion of the magazine is located at the retreat position, Fig. 15C is a side view of Fig. 15A, and Fig. 15D is a side view of Fig. 15B.

[fig.16]Fig. 16A is a plane view of a magazine according to a third embodiment in a state that a remaining number display portion is located at a display position and Fig. 16B is a plane view of the magazine according to the third embodiment in a state that the remaining number display portion is located at a retreat position.

[fig.17]Fig. 17A is a plane view of a magazine according to a fourth embodiment in a state that a remaining number display portion is located at a retreat position and Fig. 17B is a plane view of the magazine according to the fourth embodiment in a state that the remaining number display portion is located at a display position.

[fig.18]Fig. 18A is a plane view of a remaining number display unit in a state that a remaining number display portion is moved backward, Fig. 18B is a plane view of the remaining number display unit in a state that the remaining number display portion is

moved frontward, and Fig. 18C is a plane view of a magazine according to a fifth embodiment.

[fig.19]Fig. 19A is a plane view of a magazine according to a sixth embodiment in a state that a remaining number display portion is located at a retreat position and Fig. 19B is a plane view of the magazine according to the sixth embodiment in a state that the remaining number display portion is located at a display position.

[fig.20]This is a side view of a magazine according to the seventh embodiment illustrating a state that a remaining number display portion is moved frontward to a display position.

[fig.21]This is a front view of the magazine according to a seventh embodiment.

[fig.22]This is a side view of the magazine according to the seventh embodiment illustrating a state that a push plate is further moved frontward after the remaining number display portion is moved frontward to the display position.

[fig.23]This is a side view of the magazine according to the seventh embodiment illustrating a state that the remaining number display portion is retreated backward from the display position.

[fig.24]This is a plane view of the magazine in the state of Fig. 23.

[fig.25]This is a rear view of the magazine in the state of Fig. 23.

[fig.26]This is a sectional view on arrow A-A of Fig. 24.

[fig.27]Fig. 27A is a side view of a push plate of the magazine according to the seventh embodiment and Fig. 27B is a back view of the push plate of the magazine according to the seventh embodiment.

[fig.28]Fig. 28A is a plane view of a moving portion of the magazine according to the seventh embodiment and Fig. 28B is a side view of the moving portion of the magazine according to the seventh embodiment.

[fig.29]This is a side view of a magazine according to an eighth embodiment illustrating a state that a remaining number display portion is moved frontward to a display position.

[fig.30]This is a side view of the magazine according to the eighth embodiment illustrating a state that a push plate is further moved frontward after the remaining number display portion is moved frontward to the display position.

[fig.31]This is a side view of the magazine according to the eighth embodiment illustrating a state that the remaining number display portion is retreated backward from the display position.

[fig.32]This is a plane view of the magazine in the state of Fig. 31.

[fig.33]This is a rear view of the magazine in the state of Fig. 31.

[fig.34]This is a front view of the magazine according to the eighth embodiment.

[fig.35]Fig. 35A is a plane view of a moving portion of the magazine according to the

eighth embodiment and Fig. 35B is a side view of the moving portion of the magazine according to the eighth embodiment.

Description of Embodiments

[0016] In the following, embodiments of the present invention will be described with reference to the drawings. Here, similar structural components have the same numeral in all drawings and description thereof will not be repeated.

[0017] (First embodiment)

Figs. 1 to 4 are views illustrating a magazine 100 in a state that a remaining number display portion 31 is moved to a display position. Fig. 1 is a plane view, Fig. 2 is a side view, Fig. 3 is a rear view, and Fig. 4 is a front view. Figs. 5 to 8 are views illustrating the magazine 100 in a state that the remaining number display portion 31 is moved to a retreat position. Fig. 5 is a plane view, Fig. 6 is a side view, Fig. 7 is a rear view, and Fig. 8 is a front view. Here, cigarette commodities 60 are not illustrated in Figs. 1, 3, 5 and 7.

Fig. 9 being a plane view of the magazine 100 illustrates a state of having a less number of remaining pieces than that in Fig. 2. Fig. 10 is a sectional view on arrow A-A of Fig. 5. Fig. 11A and Fig. 11B are views illustrating a push plate 20 of the magazine 100. Fig. 11A is a side view and Fig. 11B is a back view. Fig. 12 is a side view of a reel 50 of the magazine 100. Fig. 13 is a plane view of a swing member 30.

[0018] The magazine 100 according to the present embodiment includes a mount portion 10, a push plate 20, a reel 50 as an urging member, and a swing member 30 as a moving portion. The mount portion 10 is a tray on which a plurality of commodities (for example, cigarette commodities 60) is mounted in a line in the front-back direction. The push plate 20 is arranged so as to be moved frontward and backward along the mount portion 10. The urging member (the reel 50) is a unit to urge the push plate 20 frontward. The moving portion (the swing member 30) is arranged movably against the mount portion 10. The moving portion (the swing member 30) is driven by the push plate 20 which is moved frontward as being urged frontward by the urging member (the reel 50). The push plate 20 urges a back face of the backmost commodity (a cigarette commodity 60b) frontward. When the frontmost commodity (a cigarette commodity 60a) is pulled out from the mount portion 10, the push plate 20 moves the rest of commodities frontward.

[0019] In the first to fifth embodiments, a swing member is exemplified as the moving portion. At least a part of the swing member is to be parallelly moved or rotatably moved in a reciprocating manner against the mount portion 10.

In the sixth embodiment exemplifies the moving portion which is moved frontward and backward as being continuously integrated with the push plate 20.

The seventh and eighth embodiments exemplify the moving portion which is moved frontward and backward as being attracted to the push plate 20 to be capable of being engaged and disengaged.

[0020] The moving portion (the swing member 30) includes the remaining number display portion 31 which displays and notifies that the number of cigarette commodities 60 mounted on the mount portion 10 becomes to a predetermined number N (N is a positive integer) or smaller. Owing to movement of the swing member 30, the remaining number display portion 31 is moved between a display position enabling to be visible from the outside of the magazine 100 and the retreat position being different from the display position.

[0021] The remaining number display portion 31 of the present embodiment is formed at a front end part of the swing member 30. The display position of the present embodiment is at the right side facing from the front side of the magazine 100 (the lower side in Fig. 1 and the right side in Fig. 4) and the retreat position thereof is at the left side and the center. When the push plate moved frontward as being urged by the reel 50 arrives at a predetermined proceeding position in the front-back direction, the remaining number display portion 31 is moved from the retreat position to the display position.

[0022] The swing member 30 is arranged swingably against the mount portion 10 and is swung as being interlocked with proceeding of the push plate 20 to the predetermined proceeding position. The proceeding position is in the vicinity of the front end of the mount portion 10. The remaining number display portion 31 is moved from the retreat position to the display position as being interlocked with swinging of the swing member 30 at the time when the push plate 20 is moved frontward to the proceeding position. With the above, it is displayed and notified that the number of commodities remaining on the mount portion 10 becomes to the predetermined number N (N is a positive integer) or smaller.

[0023] It is possible that the swing member 30 is to be swung with force transmitted from the push plate 20 to the swing member 30 while the push plate 20 is contacted directly to the swing member 30 when the push plate 20 is moved frontward to the predetermined proceeding position. Alternatively, it is also possible that the swing member 30 is to be swung with force transmitted indirectly from the push plate 20 to the swing member 30.

Similarly, it is possible that the remaining number display portion 31 is moved with force transmitted from the swing member 30 directly to the remaining number display portion 31. Alternatively, it is also possible that the remaining number display portion 31 is moved with force transmitted from the swing member 30 indirectly to the remaining number display portion 31.

The predetermined number N may be varied in accordance with a dimension of commodities in the front-back direction (thickness in the front-back direction). Accordingly, there may be a case that a predetermined number N when certain commodities are accommodated in the magazine 100 differs from a predetermined number N when commodities having different thickness in the front-back direction are accommodated in the magazine 100.

[0024] In the following, the magazine 100 of the present embodiment will be described in detail.

[0025] As illustrated in Figs. 1 to 9, the mount portion 10 is formed to have a semi-housing shape which is opened upward. The mount portion 10 includes a bottom plate portion 11, a left and right pair of side wall portions 12, a front wall portion 13 which is arranged as being perpendicular to the front end of the bottom plate portion 11, and a back wall portion 14 which is arranged perpendicularly to the back end of the bottom plate portion 11.

The mount portion 10 is multi-bottomed, in particular double-bottomed, at the front end part thereof. The upper bottom part is the bottom plate portion 11 and the lower bottom part is a receiving plate portion 15 which supports the front end part of the swing member 30 with an upper face thereof.

The front wall portion 13 being a double-plate-like portion includes a front plate portion 13a and a back plate portion 13b.

The front plate portion 13a of the front wall portion 13 is raised vertically upward from the bottom plate portion 11 at the front end of the receiving plate portion 15. The back plate portion 13b is raised vertically from the bottom plate portion 11 at a position being slightly apart backward from the front plate portion 13a.

A label holder 17 to which a commodity label (not illustrated) and the like is inserted is formed between the front plate portion 13a and the back plate portion 13b.

The back wall portion 14 being a double-plate-like portion also includes a front plate portion 14a and a back plate portion 14b.

The front plate portion 14a of the back wall portion 14 is arranged to be perpendicular to the back end of the bottom plate portion 11. The back plate portion 14b of the back wall portion 14 is arranged integrally with the front plate portion 14a at a position being slightly apart backward from the front plate portion 14a.

A label holder 18 to which a commodity label (not illustrated) and the like is inserted is formed between the front plate portion 14a and the back plate portion 14b.

The right and left side wall portions 12 are arranged to be perpendicular respectively to both right and left ends of the bottom plate portion 11 as being raised upward from the bottom plate portion 11 and being extended downward from the bottom plate portion 11. At the front end part of the mount portion 10, the right and left side wall

portions 12 respectively close side sections of a space area between the bottom plate portion 11 and the receiving plate portion 15.

The front end part of the swing member 30 is inserted to the space area between the bottom plate 11 and the receiving plate portion 15. Then, the front end part of the swing member 30 is to be swung horizontally (approximately to right and left) in the space area. The front end of the space area is closed by a lower part of the front plate portion 13a.

The mount portion 10 further includes a blade 19 protruded downward from a lower face of the receiving plate portion 15.

The mount portion 10 is formed of transparent resin and the like, for example.

[0026] The mount portion 10 is capable of accommodating a plurality of cigarette commodities 60 to be vertically placed as being aligned in the front-back direction in a semi-housing area which is surrounded by the bottom plate portion 11, the right and left side wall portions 12, the back plate portion 13b of the front wall portion 13, and the front plate portion 14a of the back wall portion 14. For example, the mount portion 10 is capable of mounting (accommodating) 15 pieces of cigarette commodities 60 at maximum.

[0027] A slit 11a for interlocking the push plate 20 to the bottom plate portion 11 is formed at the bottom plate portion 11 as being extended in the front-back direction. For example, the slit 11a is located at the center in the width direction of the bottom plate portion 11.

A protruded rail portion 16 extending in the front-back direction is formed as being raised upward from an upper face of the bottom plate portion 11 at each side of the slit 11a at the upper face of the bottom plate portion 11. The cigarette commodities 60 are mounted on the mount portion 10 to be erected between the protruded rail portions 16. The cigarette commodities 60 are slid in the front-back direction as being guided by the protruded rail portions 16 and the right and left side wall portions 12 when being moved frontward by the push plate 20.

A front end part of the protruded rail portion 16 has an inclined portion 16a which is acclivitous toward the front side. Accordingly, a front-fed cigarette commodity 60 (a cigarette commodity 60a) to the frontmost row is to be lifted upward along the inclination of the inclined portion 16a.

An engaging portion 11b which engages and fixes a later-mentioned clamp 52 of the reel 50 is formed between the right and left protruded rail portions 16 at the upper face of the front end part of the bottom plate portion 11. For example, the engaging portion 11b is arranged between the inclined portions 16a of the right and left protruded rail portions 16 as not being protruded upward from the inclined portions 16a. Accordingly, the engaging portion 11b does not interfere with movement of the cigarette

commodities 60.

[0028] A display window 71 enabling the remaining number display portion 31 to be visible from the front side in a state that the remaining number display portion 31 is moved to the display position is formed at the front wall portion 13 of the mount portion 10. For example, the display window 71 is arranged at one end part in the right and left direction (for example, an end part of an observer's right side as illustrated in Fig. 4) at the lower part of the front wall portion 13. The display position is behind the display window 71.

Examples of the display window 71 include an opening which is formed at the front wall portion 13. In this case, the remaining number display portion 31 located at the display position is visible from the front side of the mount portion 10 through the opening. Alternatively, the display window 71 may be a translucent section of the front wall portion 13. In this case, the remaining number display portion 31 at the back side can be seen through the front wall portion 13 from the front side.

Meanwhile, by shielding sections of the front wall portion 13 other than the display window 71 with light shielding material (for example, paper having sufficient thickness and the like) having a light block effect, it is possible to set the remaining number display portion 31 to be invisible from the front side of the mount portion 10 when the remaining number display portion 31 is located at the retreat position other than the position behind the display window 71.

In this manner, the display window 71 which enables the remaining number display portion 31 located at the display position to be visible from the front side and the shielding portion which shields viewing of the remaining number display portion 31 located at the retreat position being different from the display position from the front side can be formed at the front end part of the mount portion 10.

[0029] The mount portion 10 is provided with a swing shaft 41 which axially supports the swing member 30. The swing shaft 41 is arranged at a position deviated to a side of the slit 11a (a side of one side wall portion 12a) in the width direction (the right and left direction) of the magazine 100.

As illustrated in Fig. 10, the upper end of the swing shaft 41 is axially supported by the lower face of the bottom plate portion 11, for example. A bearing piece 42 which axially supports the lower end of the swing shaft 41 is formed below the bottom plate portion 11. For example, the bearing piece 42 is formed to be protruded toward the center of the magazine in the width direction from a section extended downward from the bottom plate portion 11 at one side wall portion 12a.

[0030] The push plate 20 is arranged to be moved frontward and backward along the bottom plate portion 11 in a state of being connected to the bottom plate portion 11.

As illustrated in Figs. 11A and 11B, the push plate 20 includes a slide plate 21 which

is slid against the upper face of the bottom plate portion 11 as being arranged in parallel to the bottom plate portion 11, a back plate 22 which urges frontward a back face of the backmost cigarette commodity 60b as being arranged to be vertically raised from the front end of the slide plate 21, a nip portion 23 which nips the bottom plate portion 11 in cooperation with the slide plate 21, a connecting portion 24 which connects the nip portion 23 and the slide plate 21, and a reel holding portion 25 which holds the reel 50.

As illustrated in Fig. 11B, a right and left width of the connecting portion 24 is smaller than right and left widths of the slide plate 21 and the nip portion 23.

As illustrated in Fig. 10, the right and left width of the connecting portion 24 is slightly smaller than a right and left width of the slit 11a. The right and left widths of the slide plate 21 and the nip portion 23 are larger than the right and left width of the slit 11a. The connecting portion 24 is fitted to the slit 11a so that the slide plate 21 is located above the bottom plate portion 11 and that the nip portion 23 is located below the bottom plate portion 11. Accordingly, the push plate 20 is movable in the front-back direction along the slit 11a in a state that the right and left edge parts of the slit 11a at the bottom plate portion 11 are vertically nipped by the slide plate 21 and the nip portion 23.

In other words, a bottom part of the push plate 20 vertically nips (with the slide plate 21 and the nip portion 23) edge parts of the bottom plate portion 11 which are adjacent in the width direction of the slit 11a.

[0031] As illustrated in Figs. 3 and 7, one side part of the nip portion 23 of the push plate 20 structures a swing force applying portion 231 which swings the swing member 30 as directly transmitting force to the swing member 30 when the push plate 20 is moved frontward and backward. For example, the swing force applying portion 231 is formed into an arc-like shape swelling to a side of the nip portion 23.

[0032] The reel 50 is fitted to the reel holding portion 25 of the push plate 20. A reel string 51 (Fig. 12) of the reel 50 is derived frontward from the back plate 22 through an opening 22a (Fig. 11A) formed at the back plate 22.

The clamp 52 is fixed to the top end of the reel string 51. The clamp 52 is fixed as being engaged with the engaging portion 11b which is arranged at the upper face of the front end part of the bottom plate portion 11. A plate spring (not illustrated) is spirally accommodated in a case 53 of the reel 50 and the base end part of the reel string 51 is connected to one end of the plate spring. The plate spring urges the reel string 51 in a direction to draw the reel string 51 into the case 53. Therefore, the push plate 20 is pulled frontward (toward the engaging portion 11b side) by the reel string 51. With the tension force, the back plate 22 of the push plate 20 urges the back face of the backmost cigarette commodity 60 (the cigarette commodity 60b) frontward.

The movement range of the push plate 20 is set to be capable of moving a cigarette commodity 60 to the frontmost section of the mount portion 10 when the cigarette commodity 60 on the mount portion 10 is the last one.

The reel string 51 is extended in the front-back direction between the left and right pair of protruded rail portions 16 or in the slit 11a so as not to be interfered with cigarette commodities 60 supported by the protruded rail portions 16.

[0033] In the present embodiment, the swing member 30 formed like a flat plate elongated in the front-back direction is arranged horizontally as facing plate faces thereof vertically. The swing member 30 is formed into a shape which is bent (curved) at an intermediate part in the longitudinal direction within a plane (a horizontal plane) being parallel to the bottom plate portion 11.

The swing member 30 is arranged below the bottom plate portion 11.

For example, the swing member 30 is axially supported by the swing shaft 41 as being swingable against the bottom plate portion 11 at the bent portion or the vicinity thereof. The axis of the swing shaft 41 is oriented to a direction being perpendicular to the horizontal plane, that is, a direction being perpendicular to the bottom plate portion 11. The swing shaft 41 is arranged to the bottom plate portion 11 at a section which is close to one side wall portion 12a against a movement route of the push plate 20. The side wall portion 12 at the opposite side to the swing shaft 41 against the movement route of the push plate 20 is a side wall portion 12b.

The swing member 30 is capable of being swung between a state illustrated in Figs. 1 and 3 and a state illustrated in Figs. 5 and 7 having the swing shaft 41 as a fulcrum.

[0034] For example, the remaining number display portion 31 which displays and notifies that the remaining number of cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller is formed at the front end of the swing member 30.

It is preferable that the predetermined number N is four or larger, and specifically, is five, for example. As described above, the mount portion 10 is capable of mounting 15 pieces of cigarette commodities 60 at maximum, for example. In this case, it is structured that the number subtracting the predetermined number N (for example, four or five) from the maximum mount number (fifteen) of the cigarette commodities 60 onto the mount portion 10 is ten or larger.

In general, cigarette commodities 60 are packed collectively by a carton. One carton generally includes 10 pieces of cigarette commodities 60. Accordingly, it is possible to replenish cigarette commodities 60 by the amount of one carton (that is, 10 pieces) without causing a surplus when notification with displaying that the remaining number of the cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller are performed.

[0035] For example, the remaining number display portion 31 is a colored portion of which color is different from that of a section around the remaining number display portion 31 of the magazine 100 in at least any one of brightness, intensity and a hue. It is preferable that the colored portion is to be a noticeable color such as red, for example, to provide excellent visibility for an operator. With the above, notification of the remaining number can be appropriately performed. When the remaining number display portion 31 is moved behind the display window 71, the remaining number display portion 31 is easily visible for an operator.

[0036] Even if the entire swing member 30 is in the same color, an operator can easily view the remaining number display portion 31 when the remaining number display portion 31 is located at the display position (for example, behind the display window 71) as long as the color is different from a color of the front end part of the mount portion 10. Here, a color includes a transparent color. Examples of the above include a case that the front end part of the mount portion 10 is transparent and the swing member 30 is white.

[0037] The swing member 30 having a shape elongated in the front-back direction is formed to be bent at an intermediate part in the longitudinal direction within a plane which is parallel to the bottom plate portion 11 (see Fig. 10). The swing member 30 is arranged beside the movement route of the push plate 20 (at the left side in Fig. 10). As illustrated in Fig. 13, an exterior angle (angle A in Fig. 13) of the bent portion of the swing member 30 at the side of the movement route of the push plate 20 is below 180 degrees. In other words, a plane angle (A) of a section 303 of the swing member 30 oriented to the movement route side of the push plate 20 is below 180 degrees. In contrast, an exterior angle (B) of the bent portion of the swing member 30 at the opposite side to the movement route of the push plate 20 is over 180 degrees. In other words, a plane angle (B) of a section 304 of the swing member 30 oriented to the opposite side to the movement route of the push plate 20 is over 180 degrees. Here, angle A is preferably over 90 degrees as being 135 degrees or larger, for example. Angle B is preferably below 270 degrees as being 225 degrees or smaller, for example.

[0038] At a back end part of a front portion 301 of the swing member 30, the section oriented to the movement route side of the push plate 20 is a first swing force receiving portion 35 which is to be pushed by the swing force applying portion 231 of the nip portion 23 when the push plate 20 is moved frontward to the predetermined proceeding position.

At a front end part of a back portion 302 of the swing member 30, the section oriented to the movement route side of the push plate 20 is a second swing force receiving portion 34 which is to be pushed by the swing force applying portion 231 of the nip portion 23 when the push plate 20 is moved backward to a predetermined

receding position.

[0039] When the push plate 20 is moved frontward to the predetermined proceeding position at the front side from the swing shaft 41 (for example, being moved frontward from the position of Figs. 5 to 7 to the position of Figs. 1 to 3), the swing force applying portion 231 of the nip portion 23 pushes away the front portion 301 sideways (Figs. 1 and 3) by pushing the first swing force receiving portion 35 of the front portion 301 of the swing member 30 as contacting to the first swing force receiving portion 35. With the above, the swing member 30 is swung having the swing shaft 41 as a fulcrum and the remaining number display portion 31 at the front end part of the swing member 30 is moved behind the display window 71, that is, to the display position (Fig. 4).

In this manner, the remaining number display portion 31 is to be in a state of being visible from the front side of the magazine 100 by moving the remaining number display portion 31 to the display position. Thus, notification with displaying of the remaining number is performed.

When the remaining number of the cigarette commodities 60 mounted on the mount portion 10 becomes to the predetermined number N (for example, 5 pieces) or smaller, the notification with displaying of the remaining number is to be performed as the remaining number display portion 31 being moved to the predetermined display position.

[0040] Swinging of the swing member 30 from the retreat position toward the display position is stopped owing to movement restriction of the front portion 301 by an inner face of the side wall portion 12a. In this state, as illustrated in Figs. 1 and 3, the longitudinal direction of the front portion 301 becomes to the front-back direction and the longitudinal direction of the back portion 302 is inclined against the front-back direction.

The positional relation of the swing member 30 with the mount portion 10 is maintained in a state of Fig. 3 and the notification with displaying of the remaining number is continued even when the push plate 20 is further moved frontward from the position of Fig. 3 (for example, being moved frontward to a position of Fig. 9).

[0041] Owing to the notification with displaying, an operator of the magazine 100 can easily recognize that the remaining number of the cigarette commodities 60 on the mount portion 10 becomes to the predetermined number N (for example, 5 pieces) or smaller and can replenish cigarette commodities 60 to the mount portion 10 as needed.

[0042] On the other hand, when the push plate 20 is moved backward to the predetermined receding position at the back side from the swing shaft 41 (for example, being moved backward from the position of Figs. 1 to 3 to the position of Figs. 5 to 7), the swing force applying position 231 of the nip portion 23 pushes away the back portion 302 sideways (Figs. 5 and 7) by pushing the second swing force receiving portion 34 of the

back portion 302 of the swing member 30 as contacting to the second swing force receiving portion 34. With the above, the swing member 30 is swung having the swing shaft 41 as a fulcrum and the remaining number display portion 31 at the front end part of the swing member 30 is moved to the retreat position being different from the display position behind the display window 71 (Fig. 8).

In this manner, the remaining number display portion 31 is to be in a state of being invisible from the front side of the magazine 100 by moving the remaining number display portion 31 to the retreat position, that is, in a state of not performing the notification with displaying of the remaining number (the notification with displaying of the remaining number is ended).

[0043] Swinging of the swing member 30 from the display position toward the retreat position is stopped owing to movement restriction of the back portion 302 by the inner face of the side wall portion 12a. In this state, as illustrated in Figs. 5 and 7, the longitudinal direction of the back portion 302 becomes to the front-back direction and the longitudinal direction of the front portion 301 is inclined against the front-back direction.

Since displaying of the remaining number is not performed in a state that cigarette commodities 60 more than the predetermined number N (for example, 5 pieces) are mounted on the mount portion 10, the operator of the magazine 100 can easily recognize that the remaining number of the cigarette commodities 60 on the mount portion 10 is larger than the predetermined number N.

[0044] In a state that the remaining number display portion 31 is moved to the retreat position, the front portion 301 is apart from the inner face of the side wall portion 12a and the first swing force receiving portion 35 is located on the movement route of the swing force applying portion 231 (Figs. 5 and 7). Accordingly, the notification with displaying of the remaining number can be repeatedly started as the push plate 20 being moved frontward once again.

Similarly, in a state that the remaining number display portion 31 is moved to the display position, the back portion 302 is apart from the inner face of the side wall portion 12a and the second swing force receiving portion 34 is located on the movement route of the swing force applying portion 231 (Figs. 1 and 3). Accordingly, the notification with displaying of the remaining number can be ended as the push plate 20 being moved backward once again.

[0045] For example, the front portion 301 of the swing member 30 has a constant width in the longitudinal direction thereof. For example, the back portion 302 of the swing member 30 also has a constant width in the longitudinal direction thereof. Here, a cutout-shaped portion 33 is formed having an inclined shape to be apart from the movement route toward the back end side at a section of the back end part of the back

portion 302 at the movement route side of the push plate 20. Accordingly, when the push plate 20 is moved frontward from the back side of the swing member 30, the swing force applying portion 231 of the nip portion 23 of the push plate 20 can be smoothly moved frontward from the back end of the back portion 302.

[0046] Next, a sequence of operation to display the remaining number of cigarette commodities 60 will be described.

A plurality of the magazines 100 is arranged at shelves of a commodity display cabinet (not illustrated) and cigarette commodities 60 are mounted on each mount portion 10 of the respective magazines 100.

[0047] For example, in a state that cigarette commodities 60 (for example, 9 pieces as illustrated in Figs. 5 to 7) more than the predetermined number N (for example, 5 pieces) are mounted on the mount portion 10, the swing member 30 is located at the retreat position being different from a backward position of the display window 71 as the back portion 302 being contacted to an inner face of the side wall portion 12.

[0048] Accordingly, it is easily recognized that the remaining number display portion 31 does not exist behind the display window 71 with viewing from the front face side of the magazine 100. That is, it is in a state that the notification with displaying of the remaining number is not performed.

[0049] Subsequently, each time when the frontmost cigarette commodity 60 (the cigarette commodity 60a) is pulled out from the mount portion 10, the push plate 20 and the remaining cigarette commodities 60 are sequentially moved frontward by the amount of thickness of the cigarette commodity 60 in the front-back direction.

[0050] As illustrated in Figs. 1 to 3, in a process that the remaining number of the cigarette commodities 60 mounted on the mount portion 10 becomes to the predetermined number N (for example, 5 pieces), the front portion 301 of the swing member 30 is swung to a position to be contacted to the inner face of the side wall portion 12 as a result of being pushed by the swing force applying portion 231 of the nip portion 23 of the push plate 20. Along with the above, the notification with displaying of the remaining number is performed as the remaining number display portion 31 being moved behind the display window 71. Accordingly, an operator can easily recognize that the remaining number of the cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller.

The back portion 302 of the swing member 30 is apart from the inner face of the side wall portion 12 and the second swing force receiving portion 34 is located on the movement route of the swing force applying portion 231.

[0051] Subsequently, even when the remaining number of the cigarette commodities 60 mounted on the mount portion 10 becomes below the predetermined number N as illustrated in Fig. 9, for example, the position of the remaining number display portion

31 and the position of the swing member 30 including the remaining number display portion 31 are the same as those in Figs. 1 to 3, so that the notification with displaying of the remaining number is continuously maintained.

In this state as well, the swing force applying portion 231 is contacted to the section 303 of the swing member 30 oriented to the movement route side of the push plate 20. Since the swinging of the swing member 30 is restricted by the swing force applying portion 231, the second swing force receiving portion 34 is continuously located on the movement route of the swing force applying portion 231.

[0052] In a case of replenishing cigarette commodities 60 to the mount portion 10, the operator expands a front-back distance between the back plate 22 and the back plate portion 13b of the front wall portion 13 by moving the push plate 20 backward. At that time, in a process that the push plate 20 is moved backward to the position illustrated in Figs. 5 to 7, for example, the swing force applying portion 231 of the nip portion 23 pushes away the back portion 302 sideways as contacting to the second swing force receiving portion 34. As a result, the back portion 302 is swung to the position to be contacted to the inner face of the side wall portion 12. Along with the above, the front portion 301 is to be apart from the inner face of the side wall portion 12 and the remaining number display portion 31 is moved to the retreat position being different from the backward position of the display window 71, so that the notification with displaying of the remaining number is ended.

[0053] Similarly to the above, after the cigarette commodities 60 are replenished, the notification with displaying of the remaining number is to be performed or not to be performed in accordance with the remaining number of the cigarette commodities 60 on the mount portion 10.

[0054] According to the first embodiment as described above, the push plate 20 urges the back face of the backmost cigarette commodity 60b frontward. Here, when the frontmost cigarette commodity 60a is pulled out from the mount portion 10, the remaining cigarette commodities are moved frontward. Therefore, each time when the frontmost cigarette commodity 60a is pulled out, the push plate 20 is moved frontward subsequently in accordance therewith. The swing member 30 is swung as being interlocked with the front-back movement of the push plate 20. The remaining number display portion 31 is moved to the predetermined display position (for example, the backward position of the display window 71) as being interlocked with the swinging of the swing member 30 while the push plate 20 is moved frontward. Accordingly, it is possible to notify with displaying that the remaining number of the cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller.

The swing member 30 is swung as being interlocked with frontward movement of

the push plate 20 to the predetermined proceeding position and the remaining number display portion 31 is moved to the predetermined display position as being interlocked with the swinging of the swing member 30 when the push plate 20 is moved frontward to the predetermined proceeding position. Accordingly, the start timing of the notification with displaying of the remaining number by the remaining number display portion 31 is determined by the position of the push plate 20 which urges the remaining cigarette commodities 60. Then, the position of the push plate 20 is determined by a total front-back length of the remaining cigarette commodities 60. Hence, since the start timing of the notification with displaying of the remaining number accurately reflects the remaining number of commodities at the timing, it is possible to accurately detect and notify that the remaining number of the cigarette commodities 60 mounted on the mount portion 10 of the magazine 100 becomes equal to the predetermined number N or smaller.

[0055] In a case that the push plate 20 is urged by a plate spring which includes a section drawn from a spiral section, there is a possibility that proceeding operation of the push plate 20 is disturbed owing to twisting of the plate spring.

On the contrary, the present embodiment does not employ a structure that a section exposed as being drawn from a spiral section of a plate spring.

Here, it is possible to display the remaining number of cigarette commodities 60 even through the push plate 20 is urged frontward by utilizing entity other than a plate spring which includes an exposed section as being drawn from a spiral section (for example, the reel 50 having the structure that a plate spring is accommodated in the case 53 as described above). According to the above structure, it is possible to prevent occurrence of a problem that proceeding operation of the push plate 20 is disturbed owing to twisting of an exposed plate spring.

[0056] In a case that a spiral portion of a plate spring including a section drawn from a spiral section is arranged below the mount portion 10, increase of a vertical dimension of a magazine is caused.

In contrast, since a spiral section is not required to be arranged below the mount portion, the present embodiment employs a structure to arrange the reel 50 above the bottom plate portion 11 of the mount portion 10. Accordingly, it is possible to prevent occurrence of the above problem.

[0057] (Second embodiment)

A magazine according to the present embodiment is different from the magazine 100 according to the first embodiment only in points described in the following and is structured similarly to the magazine 100 according to the first embodiment in the rest of points.

[0058] The magazine according to the present embodiment includes a temporal fixing

portion which temporally fixes the swing member 30 to the mount portion 10 at a swing angle where the remaining number display portion 31 is located at the retreat position being different from the display position (the backward position of the display window 71).

[0059] Figs. 14A and 14B are explanatory views for an example of the magazine according to a second embodiment. Fig. 14A illustrates a state that the swing member 30 is temporally fixed by a spring (an urging portion) 81 being an example of the temporal fixing portion in a state that the remaining number display portion 31 is located at the retreat position. Fig. 14B illustrates a state that the remaining number display portion 31 is moved to the display position owing to swinging of the swing member 30 against the urging of the spring 81.

[0060] The spring 81 urges the swing member 30 in a direction that the remaining number display portion 31 is to be close to the retreat position.

Accordingly, when the push plate 20 is located at the back side from the swing shaft 41, that is, when the remaining number of the cigarette commodities 60 is larger than the predetermined number N, the swing member 30 is temporally fixed to the mount portion 10 at the swing angle where the remaining number display portion 31 is located at the retreat position in accordance with urging of the spring 81. Thus, the remaining number display portion 31 is maintained at the retreat position.

On the other hand, when the push plate 20 is located at the front side from the swing shaft 41, that is, the remaining number of the cigarette commodities 60 is equal to the predetermined number N or smaller, the swing member 30 is swung by the push plate 20 against the urging of the spring 81 and is maintained at the swing angle where the remaining number display portion 31 is located at the display position.

[0061] For example, the spring 81 urges the front portion 301 of the swing member 30 in a direction to be apart from one side wall portion 12.

Specifically, the spring 81 is a torsion spring, for example, and is structured by winding an elastic wire rod (for example, a metal wire). The spring 81 includes a wound portion 81a obtained by winding the wire rod in a coil-shape and a pair of extended portions 81b, 81c extended from the wound portion 81a. The extended portions 81b, 81c are both end sections of the wire rod and the intermediate portion of the wire rod between the extended portion 81b and the extended portion 81c structures the wound portion 81a.

For example, the wound portion 81a is axially supported by the swing shaft 41 together with the swing member 30. The top end part of one extended portion 81b is contacted to an inner face of one side wall portion 12 to urge the side wall portion 12 from the inside to the outside. The top end part of the other extended portion 81c is fixed to the front portion 301 of the swing member 30.

It is also possible that the spring 81 urges the back portion 302 of the swing member 30 in a direction to be close to one side wall portion 12.

[0062] For example, the spring 81 is accommodated in a concave portion 310 formed at an upper face of the swing member 30. With this structure, increase in thickness of a magazine 200 can be suppressed.

[0063] Figs. 15A to 15D are explanatory views for another example of the magazine according to the second embodiment. Fig. 15A illustrates a state that the remaining number display portion 31 is moved to the display position and that first and second magnetic bodies 91, 92 being another example of the temporal fixing portion are mutually separated. Fig. 15B illustrates a state that the swing member 30 is temporally fixed to the mount portion 10 at the swing angle where the remaining number display portion 31 is located at the retreat position owing to mutual attraction between the first and second magnetic bodies 91, 92. Fig. 15C is a side view in a state of Fig. 15A and Fig. 15D is a side view in a state of Fig. 15B.

[0064] In the example of Figs. 15A to 15D, the temporal fixing portion is an attraction maintaining portion which maintains to attract the swing member 30 to the mount portion 10 at the swing angle where the remaining number display portion 31 is located at the retreat position. The attraction maintaining portion is structured with the first magnetic body 91 which is arranged at the swing member 30 and the second magnetic body 92 which is arranged at the mount portion 10 to be attracted mutually to the first magnetic body 91. For example, the first magnetic body 91 is arranged at the upper face of the swing member 30 and the second magnetic body 92 is arranged at the lower face of the bottom plate portion 11.

[0065] At least one of the first magnetic body 91 and the second magnetic body 92 is a permanent magnet and the other is a permanent magnet or an unmagnetized ferromagnetic material or ferrimagnetic material. In a case that the first magnetic body 91 and the second magnetic body 92 are both permanent magnets, polarities at the upper face of the swing member 30 and at the lower face of the bottom plate portion 11 are to be heteropolar to each other so that the swing member 30 and the bottom plate portion 11 are mutually attracted.

[0066] When the push plate 20 is located at the back side from the swing shaft 41, that is, when the remaining number of the cigarette commodities 60 is larger than the predetermined number N, the mutually attracted state of the first magnetic body 91 and the second magnetic body 92 is to be maintained. Accordingly, when the remaining number of the cigarette commodities 60 is larger than the predetermined number N, the swing member 30 is temporally fixed to the mount portion 10 at the swing angle where the remaining number display portion 31 is located at the retreat position. Thus, the remaining number display portion 31 is maintained at the retreat position (Figs. 15B

and 15D).

On the other hand, when the push plate 20 is located at the front side from the swing shaft 41, that is, the remaining number of the cigarette commodities 60 is equal to the predetermined number N or smaller, the swing member 30 is swung by the push plate 20 against attracting force between the first magnetic body 91 and the second magnetic body 92, so that the first magnetic body 91 and the second magnetic body 92 are separated (Figs. 15A and 15C). Then, the swing member 30 is maintained at the swing angle where the remaining number display portion 31 is located at the display position.

[0067] According to the second embodiment as described above, a following effect can be obtained in addition to the effects obtained in the first embodiment.

The magazine 200 includes the temporal fixing portion which temporally fixes the swing member 30 to the mount portion 10 at the swing angle where the remaining number display portion 31 is located at the retreat position when the remaining number of the cigarette commodities 60 on the mount portion 10 is larger than the predetermined number N. Accordingly, it is possible to suppress occurrence of inaccurate notification of the remaining number, such that notification with displaying that the remaining number becomes equal to the predetermined number N or smaller when the remaining number of cigarette commodities 60 on the mount portion 10 is larger than the predetermined number N.

[0068] (Third embodiment)

Figs. 16A and 16B are schematic plane views of a magazine 300 according to the third embodiment. Fig. 16A illustrates a state that the remaining number display portion 31 is located at the display position and Fig. 16B illustrates a state that the remaining number display portion 31 is located at the retreat position.

The magazine 300 according to the present embodiment is different from the magazine 100 according to the first embodiment only in points described in the following and is structured similarly to the magazine 100 in the rest of points.

[0069] The swing member 30 of the present embodiment having a shape elongated in the front-back direction is also formed to be bent at an intermediate part in the longitudinal direction within a plane which is parallel to the bottom plate portion 11. The swing member 30 of the present embodiment is also arranged beside the movement route of the push plate 20. The swing member 30 of the present embodiment is different from the swing member 30 of the first embodiment in a point that the bent orientation is opposite thereto. In the present embodiment, an exterior angle (A) of the bent portion of the swing member 30 at the side of movement route of the push plate 20 is over 180 degrees. In other word, a plane angle (angle A) of the section 303 of the swing member 30 oriented to the movement route side of the push plate 20 is over 180 degrees. An exterior angle (B) of the section 304 thereof oriented to the opposite side is below 180

degrees. Here, angle A is preferably below 270 degrees as being 225 degrees or smaller, for example. Angle B is preferably over 90 degrees as being 135 degrees or larger, for example.

[0070] In the present embodiment, a section (the back portion 302) being at the back side from a bent section of the swing member 30 is axially supported by the swing shaft 41. More specifically, a back end part of the back portion 302 is axially supported, for example.

[0071] Further, the magazine 300 includes a spring 330 which temporally fixes the swing member 30 to the mount portion 10 at the swing angle where the remaining number display portion 31 is located at the retreat position when being in a state that the number of the cigarette commodities 60 on the mount portion 10 is larger than the predetermined number N. The spring 330 urges the swing member 30 in a direction that the remaining number display portion 31 is to be close to the retreat position. Specifically, for example, the spring 330 urges the front portion 301 of the swing member 30 in a direction to be apart from the side wall portion 12a.

For example, the spring 330 is a plate spring while one end part thereof is fixed to an inner face of the side wall portion 12a and the other end part is contacted to the front portion 301 of the swing member 30.

[0072] In the present embodiment, when the push plate 20 is moved frontward, the swing force applying portion 231 of the nip portion 23 of the push plate 20 moves the remaining number display portion 31 to the display position (behind the display window 71) by pushing away the front portion 301 sideways against the urging of the spring 330, as illustrated in Fig. 16A for example.

On the other hand, when the push plate 20 is moved backward from an arrangement area of the front portion 301, for example, the swing member 30 is swung and the remaining number display portion 31 is moved to the retreat position in accordance with the urging of the spring 330.

Accordingly, it is possible to perform notification that the remaining number of cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller by previously setting a shape, dimensions and arrangement of the swing member 30 so that the remaining number display portion 31 is moved to the display position at the timing when the remaining number of the cigarette commodities 60 on the mount portion 10 is decreased to the predetermined number N.

[0073] According to the third embodiment as described above, it is also possible to perform notification with displaying of the remaining number of cigarette commodities 60 mounted on the mount portion 10 of the magazine 300.

[0074] (Fourth embodiment)

Figs. 17A and 17B are schematic plane views of a magazine 400 according to a

fourth embodiment. Fig. 17A illustrates a state that the remaining number display portion 31 is located at the retreat position and Fig. 17B illustrates a state that the remaining number display portion 31 is located at the display position. The magazine 400 according to the present embodiment is different from the magazine 100 of the first embodiment and the magazine 200 of the second embodiment in points described in the following and is structured similarly to the magazines 100, 200 in the rest of points.

[0075] The magazine 400 according to the present embodiment includes a swing member 430 instead of the swing member 30. The swing member 430 is also swung as being interlocked with proceeding of the push plate 20.

Further, the magazine 400 includes a link 410 of which front end is moved frontward and backward together with the swinging of the swing member 430 as being connected to the swing member 430. The remaining number display portion 31 is formed at a front end part of the link 410. For example, the link 410 is connected to the swing member 430 through a link 420. The swing member 430, the link 420 and the link 410 are arranged below a side section of the slit 11a of the bottom plate portion 11.

[0076] Similarly to the swing member 30, the swing member 430 is axially supported to the bottom plate portion 11 by the swing shaft 41 and is held by the bottom plate portion 11 as being swingable against the bottom plate portion 11 within a plane being parallel to the bottom plate portion 11 having the swing shaft 41 as a swing fulcrum.

The swing member 430 has a pair of extended portions which are extended toward the movement route side of the push plate 20. The pair of extended portions is arranged to be V-shaped in a plane view.

The swing member 430 is swingable between a position illustrated in Fig. 17A and a position illustrated in Fig. 17B. In a state of Fig. 17A, a swing distal end side (the movement route side of the push plate 20) of the swing member 430 is located at the backmost position. In a state of Fig. 17B, the swing distal end side (the movement route side of the push plate 20) of the swing member 430 is located at the frontmost position.

The extended portion at the front side out of the pair of extended portions structures a first swing force receiving portion 435 which is to be pushed by the swing force applying portion 231 of the nip portion 23 when the push plate 20 is moved frontward. When the first swing force receiving portion 435 is pushed frontward by the swing force applying portion 231, the swing member 430 is swung from the position illustrated in Fig. 17A to the position illustrated in Fig. 17B.

The extended portion at the back side out of the pair of extended portions structures a second swing force receiving portion 434 which is to be pushed by the swing force applying portion 231 of the nip portion 23 when the push plate 20 is moved backward.

When the second swing force receiving portion 434 is pushed backward by the swing force applying portion 231, the swing member 430 is swung from the position illustrated in Fig. 17B to the position illustrated in Fig. 17A.

[0077] The link 420 is a rod-shaped member which is arranged to be parallel to the bottom plate portion 11 and extended in a state of being inclined against the front-back direction. The back end of the link 420 is connected to the first swing force receiving portion 435 to be capable of being relatively rotated within a plane parallel to the bottom plate portion 11.

[0078] The link 410 is a rod-shaped member elongated in the front-back direction as being arranged to be horizontally extended. The back end of the link 410 is connected to the front end of the link 420 to be capable of being relatively rotated within the horizontal plane. For example, the link 410 is guided to be linearly moved in the front-back direction and is held not to be dropped from the bottom plate portion 11 by a guide portion (not illustrated) which is formed at the lower face of the bottom plate portion 11.

[0079] In accordance with swinging of the swing member 430 from the state of Fig. 17A to the state of Fig. 17B, that is, in accordance with proceeding of the first swing force receiving portion 435 with swinging, the link 420 and the link 410 are moved frontward. As being guided as described above, the link 410 is linearly moved frontward. For example, the remaining number display portion 31 at the top end of the link 410 is protruded frontward from the front wall portion 13, as illustrated in Fig. 17B. Accordingly, the remaining number display portion 31 is to be in a state of being easily visible from the front side of mount portion 10, that is, in a state that notification with displaying of the remaining number is performed.

[0080] On the other hand, in accordance with swinging of the swing member 430 from the state of Fig. 17B to the state of Fig. 17A, that is, in accordance with receding of the second swing force receiving portion 434 with swinging, the link 420 and the link 410 are moved backward. At that time, the link 410 is linearly moved backward. For example, the remaining number display portion 31 at the top end of the link 410 is retreated to the retreat position at the back side from the front wall portion 13. Accordingly, the remaining number display portion 31 is to be in a state of being hardly visible from the front side of the mount portion 10, that is, in a state that notification with displaying of the remaining number is not performed.

[0081] Accordingly, it is possible to perform notification that the remaining number of cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller by previously setting shapes, dimensions and arrangement of the links 410, 420 and the swing member 430, for example, so that the remaining number display portion 31 is protruded frontward from the front wall portion 13 of the mount

portion 10 at the timing when the remaining number of the cigarette commodities 60 on the mount portion 10 is decreased to the predetermined number N or smaller.

[0082] According to the fourth embodiment as described above, it is also possible to perform notification with displaying of the remaining number of cigarette commodities 60 mounted on the mount portion 10 of the magazine 400.

[0083] (Fifth embodiment)

Figs. 18A and 18B are plane views of a remaining number display unit 501 of a magazine 500 according to a fifth embodiment. Fig. 18C is a plane view of the magazine 500 of the fifth embodiment. Fig. 18A illustrates a state that the remaining number display portion 31 is moved backward and Fig. 18B illustrates a state that the remaining number display portion 31 is moved frontward. Fig. 18C is a schematic plane view of the magazine 500. The magazine 500 according to the present embodiment is different from the magazines 100, 200 of the first and second embodiments in points described in the following and is structured similarly to the magazines 100, 200 in the rest of points.

[0084] As illustrated in Fig. 18C, the magazine 500 according to the present embodiment includes the remaining number display unit 501 which performs notification with displaying of the remaining number in cooperation with the push plate 20. Instead, the magazine 500 according to the present embodiment does not include the swing member 30, the swing shaft 41 and the bearing piece 42.

The remaining number display unit 501 is fixed to the lower face of a section of the bottom plate portion 11 beside the slit 11a.

[0085] As illustrated in Figs. 18A and 18B, the remaining number display unit 501 includes a front-back moving member 510, a frontward urging portion (for example, a frontward urging spring 540), and a moving member holding portion (for example, a main body case 520).

[0086] The front-back moving member 510 is arranged to be movable frontward and backward relatively to the mount portion 10, that is, to be swingable in the front-back direction. The frontward urging portion urges the front-back moving member 510 frontward relatively to the mount portion 10. The moving member holding portion holds the front-back moving member 510 by being engaged with the front-back moving member 510 in a state that the front-back moving member 510 is moved backward against urging of the frontward urging portion. The remaining number display portion 31 is formed at the front-back moving member 510. A swing member 530 releases engagement between the moving member holding portion and the front-back moving member 510 and moves the front-back moving member 510 frontward in accordance with the urging of the frontward urging portion owing to swinging when the push plate 20 is moved frontward.

[0087] The main body case 520 is fixed to the lower face of the bottom plate portion 11. For example, the main body case 520 is arranged to have the front end thereof approximately matched to the front end of the mount portion 10.

The main body case 520 includes a bottom plate portion 522 and side wall portions 521 raised from both right and left side end parts of the bottom plate portion 522. The front-back moving member 510 is arranged movably in the front-back direction relatively against the main body case 520 in a space surrounded by the bottom plate portion 522 and the side wall portions 521. An upper part of the main body case 520 is closed by the bottom plate portion 11 so as to suppress falling-out of the front-back moving member 510 through the upper side of the main body case 520. The main body case 520 and the bottom plate portion 11 guide the front-back moving member 510 so that the front-back moving member 510 can be linearly moved in the front-back direction against the main body case 520.

[0088] The front-back moving member 510 is a rod-shaped member elongated in the front-back direction and the front end thereof structures the remaining number display portion 31 as being colored, for example. A spring accommodating opening 511 which accommodates the frontward urging spring 540 is formed at the front-back moving member 510. The spring accommodating opening 511 is shaped like an elongated hole elongated in the front-back direction and vertically penetrates the front-back moving member 510, for example.

A spring receiving protrusion 524 raised upward is formed at the upper face of the bottom plate 11 of the main body case 520. The spring receiving protrusion 524 is located in the spring accommodating opening 511.

[0089] For example, the frontward urging spring 540 is a compression type coil spring and is accommodated in the spring accommodating opening 511. The frontward urging spring 540 is arranged between the front edge of the spring accommodating opening 511 and the spring receiving protrusion 524 in a compressed state. The back end part of the frontward urging spring 540 urges the spring receiving protrusion 524 backward. The front end part of the frontward urging spring 540 urges the front-back moving member 510 frontward relatively to the main body case 520 as being contacted to the front edge of the spring accommodating opening 511.

[0090] The front-back moving member 510 is formed with an engaging piece 512 which is capable of engaging with the front end of a cutout-shaped portion 523 formed at one side wall portion 521a of the main body case 520, and a cutout-shaped portion 513 which allows inward movement (movement from a state of Fig. 18A to a state of Fig. 18B) of the engaging piece 512.

As illustrated in Fig. 18A, the engaging piece 512 is protruded frontward from a side end part of the back edge of the cutout-shaped portion 513 of the front-back moving

member 510. Further, the top end part of the engaging piece 512 is protruded as being oriented laterally to run off the edge of the cutout-shaped portion 513.

[0091] The front-back moving member 510 is formed of elastic material such as resin. Accordingly, when being pushed from the outside, the engaging piece 512 is elastically deformed so that the top end thereof enters into the cutout-shaped portion 513 (Fig. 18B). When the push force is released, the engaging piece 512 is elastically returned and the top end thereof is protruded as being oriented laterally from the cutout-shaped portion 513 once again (Fig. 18A).

[0092] Further, the front-back moving member 510 is formed with a moving protrusion 514 which is moved frontward and backward in a cutout-shaped portion 525 formed at a side wall portion 521a. The moving protrusion 514 is laterally protruded to the front-back moving member 510 as being arranged in the cutout-shaped portion 525.

[0093] In the present embodiment as well, the swing member 530 is formed as being elongated in the front-back direction.

In the present embodiment, the swing member 530 is bent so that a plane angle (angle B in Fig. 18A) of a section of the swing member 530 being opposite to a section oriented to the movement route side of the swing force applying portion 231 (Fig. 3) of the push plate 20 is below 180 degrees.

[0094] The swing member 530 is formed of elastically deformable material such as resin. The front end portion 532 of the swing member 530 is fixed to one side wall portion 521a of the main body case 520. The swing member 530 is swingable against the main body case 520 having the fixed front end portion 532 as a swing fulcrum. The swinging is actualized owing to elastic deformation of the swing member 530. Since the main body case 520 is fixed to the bottom plate 11 of the mount portion 10, the swing member 530 is considered to be relatively swingable against the mount portion 10. In a state of Fig. 18A, the swing member 530 is to be swung together with proceeding of the push plate 20 while the back end portion 533 thereof (the vicinity of the bent part) is located on the movement route of the swing force applying portion 231 (Fig. 3) of the push plate 20.

A protrusion 534 protruded toward the main body case 520 side is arranged at a section of the swing member 530 facing to the cutout-shaped portion 523 of the side wall portion 521.

[0095] In the present embodiment, for example, the display window 71 is structured by forming an opening through which the front end part of the front-back moving member 510 is to be capable of being protruded frontward from the front wall portion 13 at the front wall portion 13 of the mount portion 10.

[0096] Next, operation of the magazine 500 of the present embodiment will be described.

[0097] In advance, as illustrated in Fig. 18A, the top end of the engaging piece 512 is

engaged with the front edge of the cutout-shaped portion 523 of the main body case 520 and the moving protrusion 514 is located at a back part (for example, the back end 525b shown in Fig. 18B) of the cutout-shaped portion 525.

In this state, when swing force applying portion 231 (see Fig. 3) of the push plate 20 is moved frontward from the back side of the remaining number display unit 501 to the side of the remaining number display unit 501, the swing member 530 is swung as being pushed to the main body case 520 side by the swing force applying portion 231. As a result, the protrusion 534 pushes the engaging piece 512 into the cutout-shaped portion 513, so that engagement between the engaging piece 512 and the cutout-shaped portion 523 is released.

As described above, the front-back moving member 510 is urged frontward by the frontward urging spring 540. Accordingly, when the engagement between the engaging piece 512 and the cutout-shaped portion 513 is released and the top end of the engaging piece 512 enters into the cutout-shaped portion 513, the front-back moving member 510 is moved frontward relatively against the main body case 520 in accordance with the urging of the frontward urging spring 540.

As a result, since the remaining number display portion 31 is protruded frontward from the front end of the main body case 520 as illustrated with arrow B in Fig. 18B, the remaining number display portion 31 is to be in an easily visible state from the front side of the mount portion 10, that is, in a state of performing notification with displaying of the remaining number as illustrated in Fig. 18C.

That is, it is possible to perform notification that the remaining number of cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller by previously setting structure and arrangement of the remaining number display unit 501 so that the engagement between the engaging piece 512 and the cutout-shaped portion 523 is released at the timing when the remaining number of cigarette commodities 60 on the mount portion 10 is decreased to the predetermined number N.

As illustrated in Fig. 18B, proceeding of the front-back moving member 510 due to the urging of the frontward urging spring 540 is stopped at the time when proceeding of the moving protrusion 514 is restricted by the front edge 525a shown in Fig. 18A of the cutout-shaped portion 525.

[0098] For moving the remaining number display portion 31 to the retreat position (the position of Fig. 18A), the engaging piece 512 of the front-back moving member 510 is engaged with the front edge of the cutout-shaped portion 523 of the main body case 520 as illustrated in Fig. 18A by moving the front-back moving member 510 backward against the urging of the frontward urging spring 540 manually by an operator, for example.

[0099] According to the fifth embodiment as described above, it is also possible to perform notification with displaying of the remaining number of cigarette commodities 60 mounted on the mount portion 10 of the magazine 500.

[0100] In the above embodiments, description is performed respectively on an example that the push plate 20 is urged frontward by utilizing the reel 50 having the plate spring accommodated in the case 53. However, it is also possible to urge the push plate 20 frontward by utilizing a plate spring which is structured to have at least a section thereof exposed.

[0101] (Sixth embodiment)

A magazine 100 of the present embodiment is different from the first embodiment in a point to include a moving portion 630 which is moved frontward and backward as being continuously integrated with the push plate 20 as substitute for the swing member 30 of the first embodiment.

[0102] Fig. 19A is a plane view of the magazine 100 in a state that a remaining number display portion 631 is located at the retreat position. Fig. 19B is a plane view of the magazine 100 in a state that the remaining number display portion 631 is located at the display position.

[0103] The moving portion 630 of the present embodiment is a protrusion arranged in a fixed manner at the lower face of the slide plate 21 of the push plate 20. The display portion 631 colored in a color being different from that of the moving portion 630 is arranged at the top end of the moving portion 630. The moving portion 630 is protruded frontward from the back plate 22 of the push plate 20. The protruded length is approximately equal to the total front-back length of the amount of a predetermined number (for example, 5 pieces) of cigarette commodities 60 (see Fig. 2). A slit (not illustrated) through which the moving portion 630 is capable of proceeding and receding is formed at the front wall portion 13 as the display window.

[0104] When the push plate 20 is located at an intermediate part or the back side of the magazine 100 as illustrated in Fig. 19A, the display portion 631 of the moving portion 630 is located behind the front wall portion 13. Accordingly, it is difficult to view the display portion 631 through the slit (the display window) from the front side of the magazine 100. When the push plate 20 arrives at a predetermined proceeding position (not illustrated), the display portion 631 becomes to be visible from the front side while the display portion 631 passing through the slit. When the push plate 20 is further moved frontward as illustrated in Fig. 19B, the display portion 631 is continuously visible as being maintained in a state of being protruded frontward from the front wall portion 13. Thus, it is recognized that the remaining number of the cigarette commodities 60 becomes equal to the predetermined number N and that the push plate 20 arrives at the predetermined proceeding position.

[0105] The following technical ideas are included in at least one of the first to sixth embodiments.

(1) A magazine including a mount portion on which a plurality of commodities is mounted in a line in a font-back direction, a push plate which is arranged to be moved frontward and backward along the mount portion, an urging member which urges the push plate frontward, and a moving portion which is arranged to be movable against the mount portion as being driven by the push plate urged by the urging member. Here, the moving portion includes a remaining number display portion which displays and notifies that the number of the commodities mounted on the mount portion becomes equal to a predetermined number N (N is a positive integer) or smaller, the remaining number display portion is moved between a display position enabling to be visible from the outside of the magazine and a retreat position being different from the display position owing to movement of the moving portion, and the remaining number display portion is moved from the retreat position to the display position owing to arriving of the push plate is moved frontward to a predetermined proceeding position in the front-back direction.

(2) In the magazine according to idea (1), the moving portion includes a swing member which is arranged swingably against the mount portion to be swung together with proceeding of the push plate to the proceeding position in the vicinity of the front end of the mount portion, and the remaining number display portion is moved from the retreat position to the display position together with the swinging of the swing member when the push plate is moved frontward to the proceeding position.

(3) In the magazine according to idea (2), the mount portion includes a bottom plate portion which supports the commodities, and the swing member is arranged below the bottom plate portion and is axially supported to the bottom plate portion by a swing shaft which is perpendicular to the bottom plate portion so that the front end of the swing member is swingable within a plane being parallel to the bottom plate portion.

(4) In the magazine according to idea (2) or idea (3), the remaining number display portion is formed at a front end part of the swing member.

(5) In the magazine according to idea (4), the swing member has a shape elongated in the front-back direction as being shaped to be bent at an intermediate part in the longitudinal direction within a plane being parallel to the bottom plate portion and is arranged beside a movement route of the push plate, and a bent portion of the swing member has an exterior angle (A) at a side of the movement route being below 180 degrees and an exterior angle (B) at an opposite side to the movement route being over 180 degrees.

(6) In the magazine according to idea (5), the bent portion of the swing member is axially supported by the swing shaft.

(7) In the magazine according to idea (5) or idea (6), the remaining number display portion is moved from the retreat position to the display position by pushing away a section of the swing member at the front side from the swing shaft with the push plate when the push plate is moved frontward, and the remaining number display portion is moved from the display position to the retreat position by pushing away a section of the swing member at the back side from the swing shaft with the push plate when the push plate is moved backward.

(8) In the magazine according to idea (4), the swing member has a shape elongated in the front-back direction as being shaped to be bent at an intermediate part in the longitudinal direction within a plane being parallel to the bottom plate portion and is arranged beside a movement route of the push plate, and a bent portion of the swing member has an exterior angle (A) at a side of the movement route being over 180 degrees.

(9) In the magazine according to idea (8), a section of the swing member at the back side from the bent portion is axially supported by the swing shaft.

(10) In the magazine according to any one of ideas (2) to (9) further including a temporal fixing portion, the temporal fixing portion temporally fixes the swing member to the mount portion at a swing angle where the remaining number display portion is located at the retreat position while the number of the commodities on the mount portion is larger than the predetermined number N.

(11) In the magazine according to idea (10), the temporal fixing portion is an urging portion which urges the swing member in a direction that the remaining number display portion is to be close to the retreat position.

(12) In the magazine according to idea (11), the urging portion includes a spring.

(13) In the magazine according to idea (10), the temporal fixing portion is an attraction maintaining portion which maintains to attract the swing member to the mount portion at the swing angle where the remaining number display portion is located at the retreat position.

(14) In the magazine according to idea (13), the attraction maintaining portion includes a first magnetic body arranged at the swing member and a second magnetic body arranged at the mount portion to be attracted mutually to the first magnetic body.

(15) In the magazine according to idea (2) or idea (3) further including a link of which front end is moved frontward and backward together with swinging of the swing member as being connected to the swing member, the remaining number display portion is formed at a front end part of the link.

(16) In the magazine according to idea (2) further comprising a front-back moving member which is arranged to be movable frontward and backward relatively to the mount portion, a frontward urging portion which urges the front-back moving member

frontward relatively to the mount portion, and a moving member holding portion which holds the front-back moving member by being engaged with the front-back moving member in a state that the front-back moving member is moved backward against urging of the frontward urging portion. Here, the remaining number display portion is formed at the front-back moving member, and the swing member releases engagement between the moving member holding portion and the front-back moving member and moves the front-back moving member frontward in accordance with urging of the frontward urging portion owing to swinging when the push plate is moved frontward.

(27) In the magazine according to any one of ideas (1) to (16), the remaining number display portion is a colored portion of which color is different from that of a section around the remaining number display portion of the magazine.

(28) In the magazine according to any one of ideas (1) to (16) and (27), a display window which enables the remaining number display portion located at the display position to be visible from the front side and a shielding portion which shields front viewing of the remaining number display portion located at the retreat position are formed at a front end part of the mount portion.

(29) In the magazine according to any one of ideas (1) to (16), (27) and (28), a number subtracting the predetermined number N from a maximum mount number of the commodities onto the mount portion is ten or larger.

(30) In the magazine according to any one of ideas (1) to (16) and (27) to (29), the predetermined number N is four or larger.

[0106] (Seventh embodiment)

Fig. 20 being a side view of a magazine 600 according to the seventh embodiment illustrates a state that a remaining number display portion 631 is moved frontward to the display position. Fig. 21 is a front view of the magazine 600. Fig. 22 being a side view of the magazine 600 illustrates a state that a push plate 20 is further moved frontward after the remaining number display portion 631 is moved frontward to the display position. Fig. 23 being a side view of the magazine 600 illustrates a state that the remaining number display portion 631 is retreated backward from the display position. Fig. 24 is a plane view of the magazine 600 in the state of Fig. 23. Fig. 25 is a rear view of the magazine 600 in the state of Fig. 23. Fig. 26 is a sectional view on arrow A-A in Fig. 24. Figs. 27A and 27B are views illustrating the push plate 20 to which the reel 50 is attached while Fig. 27A is a side view and Fig. 27B is a back view. Figs. 28A and 28B are views illustrating a moving portion 630 while Fig. 28A is a plane view and Fig. 28B is a side view.

[0107] The magazine 600 according to the present embodiment will be described. The magazine 600 includes a mount portion 10, the push plate 20, the moving portion 630

and the remaining number display portion 631. Description redundant with the magazine 100 of the first embodiment will not be repeated.

[0108] In the magazine 600 of the present embodiment, attracting portions are arranged respectively at the moving portion 630 and the push plate 20 to be mutually attracted as being capable of being engaged and disengaged. The attracting portions are mutually attracted at the retreat position of the remaining number display portion 631 and are mutually separated at the display position.

[0109] The magazine 600 of the present embodiment further includes a proceeding restriction portion which restricts proceeding of the moving portion 630. Specifically, a front plate portion 13a of a front wall portion 13 of the mount portion 10 corresponds to the proceeding restriction portion of the present embodiment. The proceeding restriction portion restricts proceeding of the moving portion 630 at the position where the remaining number display portion 631 is moved frontward to the display position. Specifically, the attracting portions are first and second magnetic bodies 641, 642.

[0110] The attracting portions are mutually attracted when the push plate 20 is located backward from the proceeding position in the vicinity of the front end of the mount portion 10, so that the push plate 20 and the moving portion 630 are integrally moved frontward. When the push plate 20 moved frontward arrives at the proceeding position, the attracting portions are mutually separated owing to proceeding restriction of the moving portion 630 by the proceeding restriction portion.

[0111] The attracting portions are structured with the first magnetic body 641 arranged at the push plate 20 and the second magnetic body 642 arranged at the moving portion 630 to be mutually attracted to the first magnetic body 641. At least one of the first magnetic body 641 and the second magnetic body 642 is a permanent magnet and the other is a heteropolar permanent magnet or an unmagnetized ferromagnetic material or ferrimagnetic material.

[0112] The predetermined number N may be varied in accordance with a dimension of a commodity in the front-back direction (thickness in the front-back direction). Accordingly, there may be a case that a predetermined number N when certain commodities are mounted on the magazine 600 differs from a predetermined number N when commodities having different thickness in the front-back direction therefrom are mounted on the magazine 600.

[0113] As illustrated in Fig. 20, the mount portion 10 is formed to have a semi-housing shape which is opened upward. The mount portion 10 includes a bottom plate portion 11, a left and right pair of side wall portions 12, the front wall portion 13 which is arranged as being perpendicular to the front end of the bottom plate portion 11, and a back wall portion 14 which is arranged perpendicularly to the back end of the bottom plate portion 11.

[0114] The mount portion 10 is formed to be multi-bottomed, in particular double-bottomed. The upper bottom part is the bottom plate portion 11 and the lower bottom part is a receiving plate portion (a receiving portion) 15 which supports the moving portion 630 with an upper face thereof.

The front wall portion 13 being a double-plate-like portion includes the front plate portion 13a and a back plate portion 13b.

The front plate portion 13a of the front wall portion 13 is raised vertically upward from the bottom plate portion 11 at the front end of the receiving plate portion 15. The back plate portion 13b is raised perpendicularly to the bottom plate portion 11 at a position being slightly apart backward from the front plate portion 13a. A space area between the bottom plate portion 11 and the receiving plate portion 15 is to be a movement space for the moving portion 630. The front end of the space area is closed by a lower part of the front plate portion 13a.

[0115] The section of the front plate portion 13a closing the front end of the space area between the bottom plate portion 11 and the receiving plate portion 15 structures the proceeding restriction portion.

[0116] A label holder 17 to which a commodity label (not illustrated) and the like is inserted is formed between the front plate portion 13a and the back plate portion 13b.

The back wall portion 14 being a double-plate-like portion also includes a front plate portion 14a and a back plate portion 14b.

The front plate portion 14a of the back wall portion 14 is arranged to be perpendicular to the back end of the bottom plate portion 11. The back plate portion 14b of the back wall portion 14 is arranged integrally with the front plate portion 14a at a position being slightly apart backward from the front plate portion 14a.

A label holder 18 to which a commodity label (not illustrated) and the like is inserted is formed between the front plate portion 14a and the back plate portion 14b.

The right and left side wall portions 12 are arranged to be perpendicular respectively to the receiving plate portion 15 and both right and left ends of the bottom plate portion 11 as closing side parts of the space area between the receiving plate portion 15 and the bottom plate portion 11 and being raised upward from the bottom plate portion 11.

The mount portion 10 further includes a blade 19 protruded downward from a lower face of the receiving plate portion 15.

[0117] The mount portion 10 is capable of accommodating a plurality of cigarette commodities 60 to be vertically placed as being aligned in the front-back direction in a semi-housing area which is surrounded by the bottom plate portion 11, the right and left side wall portions 12, the back plate portion 13b of the front wall portion 13, and the front plate portion 14a of the back wall portion 14. For example, the mount portion 10 is capable of mounting (accommodating) 15 pieces of cigarette commodities 60 at

maximum.

[0118] A slit 11a for interlocking the push plate 20 to the bottom plate portion 11 (see Fig. 24) is formed at the bottom plate portion 11 as being extended in the front-back direction. For example, the slit 11a is located at the center in the width direction of the bottom plate portion 11.

A protruded rail portion 16 extending in the front-back direction is formed as being raised upward from an upper face of the bottom plate portion 11 at each side of the slit 11a at the upper face of the bottom plate portion 11. The cigarette commodities 60 are mounted on the mount portion 10 to be erected between the protruded rail portions 16. The cigarette commodities 60 are slid in the front-back direction as being guided by the protruded rail portions 16 and the right and left side wall portions 12 when being moved frontward by the push plate 20.

A front end part of the protruded rail portion 16 has an inclined portion 16a which is acclivitous toward the front side. Accordingly, A front-fed cigarette commodity 60 (a cigarette commodity 60a) at the frontmost row is to be lifted upward along the inclination of the inclined portion 16a.

An engaging portion 11b which engages and fixes a later-mentioned clamp 52 of the reel 50 (see Fig. 24) is formed between the right and left protruded rail portions 16 at the upper face of the front end part of the bottom plate portion 11. For example, the engaging portion 11b is arranged between the inclined portions 16a of the right and left protruded rail portions 16 as not being protruded upward from the inclined portion 16a. Accordingly, the engaging portion 11b does not interfere with movement of the cigarette commodities 60.

[0119] The push plate 20 is arranged to be moved frontward and backward along the bottom plate portion 11 in a state of being connected to the bottom plate portion 11.

As illustrated in Figs. 27A and 27B, the push plate 20 includes a slide plate 21 which is slid against the upper face of the bottom plate portion 11 as being arranged in parallel to the bottom plate portion 11, a back plate 22 which urges frontward a back face of the backmost cigarette commodity 60b as being arranged to be vertically raised from the front end of the slide plate 21, a nip portion 23 which nips the bottom plate portion 11 in cooperation with the slide plate 21, a connecting portion 24 which connects the nip portion 23 and the slide plate 21, and a reel holding portion 25 which holds the reel 50.

As illustrated in Fig. 27B, a right and left width of the connecting portion 24 is smaller than right and left widths of the slide plate 21 and the nip portion 23.

The right and left width of the connecting portion 24 is slightly smaller than a right and left width of the slit 11a. The right and left widths of the slide plate 21 and the nip portion 23 are larger than the right and left width of the slit 11a. The connecting

portion 24 is fitted to the slit 11a so that the slide plate 21 is located above the bottom plate portion 11 and that the nip portion 23 is located below the bottom plate portion 11. Accordingly, the push plate 20 is movable in the front-back direction along the slit 11a in a state that the right and left edge parts of the slit 11a at the bottom plate portion 11 are vertically nipped by the slide plate 21 and the nip portion 23.

In other words, a bottom part of the push plate 20 vertically nips (with the slide plate 21 and the nip portion 23) edge parts of the bottom plate portion 11 which are adjacent in the width direction of the slit 11a.

[0120] The reel 50 is fitted to a reel holding portion 25 of the push plate 20. Since the reel 50 is common to the first embodiment (see Fig. 12), redundant description will not be repeated. A reel string 51 of the reel 50 is derived frontward from the back plate 22 through an opening 22a (Fig. 27A) formed at the back plate 22.

The clamp 52 at the top end of the reel string 51 is fixed as being engaged with the engaging portion 11b which is arranged at the upper face of the front end part of the bottom plate portion 11. The push plate 20 is pulled frontward (toward the engaging portion 11b side) by the reel string 51. With the tension force, the back plate 22 of the push plate 20 urges the back face of the backmost cigarette commodity 60 (the cigarette commodity 60b) frontward.

The movement range of the push plate 20 is set so as to be capable of moving a cigarette commodity 60 to the frontmost section of the mount portion 10 when the cigarette commodity 60 on the mount portion 10 is the last one.

The reel string 51 is extended in the front-back direction between the left and right pair of protruded rail portions 16 or in the slit 11a as being not to be interfered with cigarette commodities 60 supported by the protruded rail portions 16.

[0121] The moving portion 630 is formed like a flat plate shape and is held horizontally in the space area between the bottom plate portion 11 and the receiving plate portion 15 to be capable of being moved in the front-back direction along the mount portion 10 within the space area. The remaining number display portion 631 which displays and notifies that the number of cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller is formed at the front end of the moving portion 630.

[0122] The remaining number display portion 631 is also a colored portion of which color is different from that of a section around the remaining number display portion 631 of the magazine 600 in at least any one of brightness, intensity and a hue. It is preferable that the colored portion is to be a noticeable color such as red, for example, to provide excellent visibility for an operator. With the above, notifying of the remaining number can be appropriately performed. Sections of the moving portion 630 other than the remaining number display portion 631 are formed of transparent resin and the like, for

example.

Accordingly, when the remaining number display portion 631 is moved frontward to the front end part (the predetermined display position) of the mount portion 10, the remaining number display portion 631 is in a state of being easily visible as being seen through the front wall portion 13. That is, notification with displaying of the remaining number of the cigarette commodities 60 on the mount portion 10 is to be performed by the remaining number display portion 631. In the present embodiment, the remaining number display portion 631 is moved frontward to a position to be contacted to the back face of the front plate portion 13a of the front wall portion 13 and performs notification with displaying at the position (that is, the display position).

[0123] As illustrated in Fig. 28, for example, the moving portion 630 includes a main body portion 632 which is shaped like a flat plate and is arranged horizontally. The remaining number display portion 631 is formed by bending the front end part of the main body portion 632 perpendicularly upward.

The notification with displaying is to be performed as the remaining number display portion 631 arriving at the predetermined display position at the time when the remaining number of the cigarette commodities 60 mounted on the mount portion 10 is decreased and becomes equal to the predetermined number N (for example, 5 pieces).

[0124] For example, the first magnetic body 641 (Fig. 28) is arranged at an upper face of the back end part of the moving portion 630. For example, the second magnetic body 642 (Fig. 27B) is arranged at a lower face of the nip portion 23 of the push plate 20. The first magnetic body 641 and the second magnetic body 642 are respectively structured and arranged to be mutually attracted. The attracting portions are structured with the first magnetic body 641 and the second magnetic body 642.

When the moving portion 630 is located at a position where proceeding thereof is restricted by the front plate portion 13a or is located backward from the position, the moving portion 630 is attracted to the push plate 20 owing to mutual attraction between the first magnetic body 641 and the second magnetic body 642. Accordingly, the push plate 20 and the moving portion 630 are integrally moved frontward and backward.

[0125] Next, operation of the magazine 600 will be described.

A plurality of the magazines 600 is arranged at shelves of a commodity display cabinet (not illustrated) and cigarette commodities 60 are mounted on each mount portion 10 of the respective magazines 600.

[0126] For example, in a state that cigarette commodities 60 (for example, 8 pieces as illustrated in Fig. 23) more than the predetermined number N (for example, 5 pieces) are mounted on the mount portion 10, the moving portion 630 is located backward from the position where proceeding thereof is restricted by the front plate portion 13a.

Therefore, the moving portion 630 and the push plate 20 are integrated owing to the first and second magnetic bodies 641, 642. At that time, as illustrated in Fig. 23, the remaining number display portion 631 is located backward from the display position. That is, the remaining number display portion 631 is located backward from the back plate portion 13b of the front wall portion 13 of the mount portion 10.

[0127] Accordingly, it is possible to recognize that the remaining number display portion 631 is not located at the front end of the mount portion 10 by viewing from a front upper side of the magazine 600 or a front lower side of the magazine 600. Here, the remaining number display portion 631 is in a state of being hardly visible from the front of the magazine 600. That is, it is a state that the notification with displaying of the remaining number is not performed.

[0128] Subsequently, each time when the frontmost cigarette commodity 60 (the cigarette commodity 60a) is pulled out from the mount portion 10, the push plate 20, the remaining cigarette commodities 60 and the moving portion 630 are sequentially moved frontward by the amount of thickness of the cigarette commodity 60 in the front-back direction.

[0129] As illustrated in Fig. 20, at the time when the remaining number of the cigarette commodities 60 mounted on the mount portion 10 becomes equal to the predetermined number N (for example, 5 pieces), the remaining number display portion 631 (and the moving portion 630 including the remaining number display portion 631) is moved frontward to the position to be contacted to the back face of the front wall portion 13 of the mount portion 10 as being in a state that proceeding thereof is restricted by the back face of the front wall portion 13. That is, the remaining number display portion 631 is in a state of staying at the display position after being moved frontward to the display position. Accordingly, it is possible to easily recognize that the remaining number display portion 631 is located at the front end of the mount portion 10 by viewing from the front upper side of the magazine 600 or the front lower side of the magazine 600. Here, the remaining number display portion 631 is in a state of being easily visible from the front of the magazine 600. That is, it is a state that the notification with displaying of the remaining number is performed.

Thus, an operator can easily recognize that the remaining number of the cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller.

[0130] Subsequently, at the time when the remaining number of the cigarette commodities 60 mounted on the mount portion 10 becomes below the predetermined number N (for example, 5 pieces) as illustrated in Fig. 22, the position of the remaining number display portion 631 (and the moving portion 630 including the remaining number display portion 631) is the same as in Fig. 20, so that the notification with displaying

that the remaining number of the cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller is continuously maintained. Here, in this state, the first magnetic body 641 and the second magnetic body 642 are separated, so that the moving portion 630 and the push plate 20 are separated. The push plate 20 is continuously moved frontward together with the cigarette commodities 60 in accordance with decrease of the remaining number of the cigarette commodities 60 mounted on the mount portion 10.

[0131] Then, in a case of replenishing cigarette commodities 60 to the mount portion 10, the operator expands a front-back distance between the back plate 22 and the back plate portion 13b of the front wall portion 13 by moving the push plate 20 backward. At that time, when the push plate 20 is moved backward to the same position as illustrated in Fig. 20, the second magnetic body 642 arrives at a position above the first magnetic body 641. Then, the moving portion 630 and the push plate 20 are integrated owing to attraction between the first magnetic body 641 and the second magnetic body 642. Accordingly, when the push plate 20 is moved backward, the moving portion 630 is also moved backward in accordance with movement of the push plate 20. That is, when the push plate 20 is moved backward to the same position as illustrated in Fig. 23, the moving portion 630 is also moved backward to the same position as illustrated in Fig. 23.

[0132] Similarly to the above, after the cigarette commodities 60 are replenished, the notification with displaying of the remaining number is to be performed or not to be performed in accordance with the remaining number of the cigarette commodities 60.

[0133] According to the seventh embodiment as described above, the push plate 20 urges the back face of the backmost cigarette commodity 60b frontward. Here, when the frontmost cigarette commodity 60a is pulled out from the mount portion 10, the remaining cigarette commodities 60 are moved frontward. Therefore, each time when the frontmost cigarette commodity 60a is pulled out, the push plate 20 is moved frontward subsequently in accordance therewith.

When the moving portion 630 at which the remaining number display portion 631 is formed is located at or behind the position where proceeding thereof is restricted by the proceeding restriction portion (the front plate portion 13a of the front wall portion 13), the moving portion 630 is moved frontward and backward integrally with the push plate 20 as being attracted to the push plate 20 owing to magnetic force of the first and second magnetic bodies 641, 642.

When the remaining number display portion 631 which is formed at the front end of the moving portion 630 is moved frontward to the display position in the vicinity of the front end of the mount portion 10 (that is, the position where the proceeding of the moving portion 630 is restricted by the proceeding restriction portion), the notification

can be performed by displaying that the remaining number of the cigarette commodities 60 on the mount portion 10 becomes equal to the predetermined number N or smaller.

Since the remaining number display portion 631 is formed at the moving portion 630 which is moved integrally with the push plate 20, the start timing of the notification with displaying of the remaining number by the remaining number display portion 631 is determined by the position of the push plate 20 which urges the remaining cigarette commodities 60. Then, the position of the push plate 20 is determined by a total front-back length of the remaining cigarette commodities 60. Hence, since the start timing of the notification with displaying of the remaining number accurately reflects the remaining number of commodities at the timing, it is possible to accurately detect and notify the remaining number of the cigarette commodities 60 mounted on the mount portion 10 of the magazine 600.

[0134] In a case that the push plate 20 is supposedly urged by a plate spring which includes a section drawn from a spiral section, there is a possibility that proceeding operation of the push plate 20 is disturbed owing to twisting of the plate spring. On the contrary, the present embodiment does not employ a structure that a section exposed as being drawn from a spiral section of a plate spring. Here, it is possible to display the remaining number of cigarette commodities 60 even through the push plate 20 is urged frontward by utilizing entity other than a plate spring which includes an exposed section as being drawn from a spiral section (for example, the reel 50 having the structure that a plate spring is accommodated in the case 53 as described above). According to the above structure, it is possible to prevent occurrence of a problem that proceeding operation of the push plate 20 is disturbed owing to twisting of an exposed plate spring.

[0135] In a case that a spiral portion of a plate spring including a section drawn from a spiral section is supposedly arranged below the mount portion 10, increase of a vertical dimension of a magazine is caused. In contrast, since a spiral section is not required to be arranged below the mount portion, the present embodiment employs a structure to arrange the reel 50 above the bottom plate portion 11 of the mount portion 10. Accordingly, it is possible to prevent occurrence of the above problem.

[0136] (Eighth embodiment)

Figs. 29 to 31 are side views of a magazine 700 according to an eighth embodiment. Fig. 29 illustrates a state that the remaining number display portion 631 is moved frontward to the display position. Fig. 30 illustrates a state that the push plate 20 is further moved frontward after the remaining number display portion 631 is moved frontward to the display position. Fig. 31 illustrates a state that the remaining number display portion 631 is retreated backward from the display position. Fig. 32 is a plane view of the magazine 700 in a state of Fig. 31. Fig. 33 is a rear view of the magazine

700 in a state of Fig. 31. Fig. 34 is a front view of the magazine 700. Figs. 35A and 35B are views illustrating the moving portion 630 of the magazine 700 while Fig. 35A is a plane view and Fig. 35B is a side view.

[0137] The magazine 700 according to the eighth embodiment is different from the magazine 600 according to the seventh embodiment only in structure of the moving portion 630 and the mount portion 10 and is structured similarly to the magazine 600 in the rest of points.

[0138] In the seventh embodiment, since proceeding of the moving portion 630 is restricted by the front plate portion 13a at the front end of the mount portion 10, the remaining number display portion 631 is structured to be capable of proceeding only until the position of being contacted to the back face of the front plate portion 13a. On the contrary, in the eighth embodiment, proceeding of the moving portion 630 is to be restricted at the time when the remaining number display portion 631 is moved frontward to the front side from the front plate portion 13a of the mount portion 10.

[0139] As illustrated in Figs. 35A and 35B, in the present embodiment, the moving portion 630 includes the main body portion 632, the remaining number display portion 631 which is formed at the front end part of the main body portion 632, the first magnetic body 641 which is arranged at the upper face of the back end part of the main body portion 632, and a stopper portion 633 which is formed at the back end part of the main body portion 632. In the present embodiment, the remaining number display portion 631 is located on the same plane as the main body portion 632. The stopper portion 633 is formed by bending the back end part of the main body portion 632 perpendicularly upward and the proceeding is restricted by a later-mentioned proceeding restriction portion 671.

[0140] In the present embodiment, the proceeding restriction portion 671 which restricts proceeding of the moving portion 630 is arranged at the lower face of the bottom plate portion 11. For example, the proceeding restriction portion 671 is a protruded rail portion extended in the front-back direction. A lower face of the back end part of the protruded rail portion is inclined as the back being upped (as the front being downed). Accordingly, when the moving portion 630 is moved frontward from the back side of the protruded rail portion, the front end of the moving portion 630 is to be capable of entering into a space between the protruded rail portion (671) and the receiving plate portion 15.

[0141] Further, in the present embodiment, the front end of a movement space for the moving portion 630 formed between the bottom plate portion 11 and the receiving plate portion 15 is opened (is not closed by the front plate portion 13a). That is, an opening 701 (Fig. 34) is formed at the front end of the movement space. The remaining number display portion 631 is capable of being protruded to the front side from the

front plate portion 13a of the mount portion 10 through the opening 701 (Fig. 29).

[0142] According to the eighth embodiment as described above, since the remaining number display portion 631 is protruded to the front side from the front end of the mount portion 10 at the display position, visibility of the remaining number display portion 631 is improved compared to the seventh embodiment.

[0143] In the above embodiments, description is performed respectively on an example that the first magnetic body 641 is arranged at the upper face of the moving portion 630 and the second magnetic body 642 is arranged at the lower face of the nip portion 23 of the push plate 20. However, arrangement of the first and second magnetic bodies 641, 642 may be performed differently as long as being capable of being mutually attracted.

For example, the first magnetic body 641 may be arranged at the lower face of the moving portion 630 and the second magnetic body 642 may be arranged at the upper face of the nip portion 23. Specifically, an example of this case is described in the following. An opening (hereinafter, a moving portion opening) extended in the front-back direction is formed at a section of the moving portion 630 vertically overlapped with the slit 11a. The bottom part of the push plate 20 vertically penetrates the slit 11a and the moving portion opening. It is preferable that the slit 11a and edge parts of the moving portion opening are vertically sandwiched by the bottom plate portion 11 and the moving portion 630. The edge parts are extended in the front-back direction as being adjacent widthwise to the slit 11a and the moving portion opening. Further, the second magnetic body 642 is arranged at the lower face of the moving portion 630 and the first magnetic body 641 is arranged at the upper face of the bottom part of the push plate 20 at a section which nips the edge parts from the lower side of the moving portion 630 (that is, the nip portion 23). It is preferable that the moving portion opening is set to have dimensions and a shape to allow movement of the connecting portion 24 of the push plate 20 so that the last cigarette commodity 60 on the mount portion 10 can be moved frontward while the push plate 20 further moves frontward as being separated from the moving portion 630 after the moving portion 630 is moved frontward until the remaining number display portion 631 arrives at the display portion.

[0144] In the above, description is performed on an example that the attracting portions are formed by the first and second magnetic bodies 641, 642. However, the attracting portions may be structured differently as long as being capable of enabling to attract the moving portion 630 with the push plate 20. For example, the attracting portions may be structured with hook-and-loop fasteners capable of being mutually engaged.

[0145] In the above, description is performed on an example that the mount portion 10 is formed to be double-bottomed while the upper bottom is the bottom plate portion 11 and the lower bottom being the receiving plate portion 15 is the receiving portion

which supports the moving portion 630. However, the receiving portion may be a receiving claw portion arranged at a plurality of positions of a circumferential part of the front-back movement area of the moving portion 630 in a plane view, that is, a claw-shaped receiving portion.

[0146] In the above, description is performed on an example that the remaining number display portion 631 is movable frontward until arriving at the front end part of the mount portion 10 or until being protruded to the front side from the front end part of the mount portion 10. However, proceeding of the remaining number display portion 631 may be restricted at a position slightly behind the front end part of the mount portion 10 (a position slightly behind (to the right side) from the position of Fig. 20). In this case, it is also possible to improve visibility of the remaining number display portion 631 from the front side of the magazine 600 by arranging a light guiding path (a transparent-resin-made light guiding path and the like) between the display position and the front end face of the mount portion 10.

[0147] In the above, description is performed on an example that the push plate 20 is urged frontward by utilizing the reel 50 having a plate spring accommodated in the case 53. However, the push plate 20 may be urged frontward by utilizing a plate spring having at least a section thereof exposed.

[0148] The following technical ideas are included in the seventh embodiment or the eighth embodiment.

(1) A magazine including a mount portion on which a plurality of commodities is mounted in a line in a font-back direction, a push plate which is arranged to be moved frontward and backward along the mount portion, an urging member which urges the push plate frontward, and a moving portion which is arranged to be movable against the mount portion as being driven by the push plate urged by the urging member. Here, the moving portion includes a remaining number display portion which displays and notifies that the number of the commodities mounted on the mount portion becomes equal to a predetermined number N (N is a positive integer) or smaller, the remaining number display portion is moved between a display position enabling to be visible from the outside of the magazine and a retreat position being different from the display position owing to movement of the moving portion, and the remaining number display portion is moved from the retreat position to the display position owing to arriving of the push plate is moved frontward to a predetermined proceeding position in the front-back direction.

(17) In the magazine according to idea (1) further including attracting portions arranged respectively at the moving portion and the push plate as being mutually attracted to be capable of being engaged and disengaged, the attracting portions are mutually attracted at the retreat position and are mutually separated at the display

position.

(18) In the magazine according to idea (17) further including a proceeding restriction portion which restricts proceeding of the moving portion, the push plate and the moving portion are integrally moved frontward as the attracting portions being mutually attracted when the push plate is located backward from the proceeding position in the vicinity of the front end of the mount portion, and the attracting portions are mutually separated owing to proceeding restriction of the moving portion by the proceeding restriction portion when the push plate moved frontward arrives at the proceeding position.

(19) In the magazine according to idea (18), the attracting portions include a first magnetic body arranged at the push plate and a second magnetic body arranged at the moving portion to be mutually attracted to the first magnetic body.

(20) In the magazine according to idea (18) or idea (19), the proceeding restriction portion is structured as closing the front end of the mount portion, and the remaining number display portion is visible by seeing through the front end of the mount portion.

(21) In the magazine according to any one of ideas (18) to (20), the proceeding restriction portion restricts proceeding of the moving portion at the time when the remaining number display portion is moved frontward to the front side from the front end of the mount portion.

(22) In the magazine according to any one of ideas (18) to (21), the mount portion is formed to have a semi-housing shape which is opened upward, the push plate is arranged to be moved frontward and backward along the bottom plate portion in a state of being interlocked with the bottom plate portion of the mount portion, and the moving portion is slidingly moved frontward and backward in a state of being held between the bottom plate portion and a receiving portion which supports the moving portion as being arranged below the bottom plate portion.

(23) In the magazine according to idea (22), the mount portion is formed to be multi-bottomed while the upper bottom is the bottom plate portion and the lower bottom is the receiving portion.

(24) In the magazine according to idea (23), the receiving portion is a receiving claw portion arranged at a plurality of positions of a circumferential part of a front-back movement area of the moving portion in a plane view.

(25) In the magazine according to idea (19), the first magnetic body is arranged at a lower face of the push plate and the second magnetic body is arranged at an upper face of the moving portion.

(26) In the magazine according to idea (19), the mount portion is formed to have a semi-housing shape which is opened upward, the push plate is arranged to be moved frontward and backward along the bottom plate portion in a state of being interlocked

with the bottom plate portion of the mount portion, the moving portion is slidingly moved frontward and backward in a state of being held between the bottom plate portion and a receiving portion which supports the moving portion as being arranged below the bottom plate portion, a slit is formed at the bottom plate portion as being extended in the front-back direction, a moving portion opening extended in the front-back direction is formed at a section of the moving portion located below the slit, a bottom part of the push plate vertically penetrates the slit and the moving portion opening, the slit and an edge part of the slit and the moving portion opening are vertically sandwiched by the bottom plate portion and the moving portion, the push plate is moved frontward and backward along the slit, the second magnetic body is arranged at a lower face of the moving portion, and the first magnetic body is arranged at an upper face of the bottom part of the push plate at a section which nips the edge part from the lower side of the moving portion.

(27) In the magazine according to any one of ideas (1) and (17) to (26), the remaining number display portion is a colored portion of which color is different from that of a section around the remaining number display portion of the magazine.

(28) In the magazine according to any one of ideas (1) and (17) to (27), a display window which enables the remaining number display portion located at the display position to be visible from the front side and a shielding portion which shields front viewing of the remaining number display portion located at the retreat position are formed at a front end part of the mount portion.

(29) In the magazine according to any one of ideas (1) and (17) to (28), a number subtracting the predetermined number N from a maximum mount number of the commodities onto the mount portion is ten or larger.

(30) In the magazine according to any one of ideas (1) and (17) to (29), the predetermined number N is four or larger.

[0149] This application claims priority based on Japanese patent application NO. 2011-063348 and Japanese patent application NO. 2011-063357 filed on March 22, 2011 and entire disclosure thereof is incorporated herein.

Claims

[Claim 1] A magazine, comprising:
a mount portion on which a plurality of commodities is mounted in a line in a front-back direction;
a push plate which is arranged to be moved frontward and backward along the mount portion;
an urging member which urges the push plate frontward; and
a moving portion which is arranged to be movable against the mount portion as being driven by the push plate urged by the urging member;
wherein the moving portion includes a remaining number display portion which displays and notifies that the number of the commodities mounted on the mount portion becomes equal to a predetermined number N (N is a positive integer) or smaller;
the remaining number display portion is moved between a display position enabling to be visible from the outside of the magazine and a retreat position being different from the display position owing to movement of the moving portion; and
the remaining number display portion is moved from the retreat position to the display position owing to arriving of the push plate is moved frontward to a predetermined proceeding position in the front-back direction.

[Claim 2] The magazine according to claim 1,
wherein the moving portion includes a swing member which is arranged swingably against the mount portion to be swung together with proceeding of the push plate to the proceeding position in the vicinity of the front end of the mount portion; and
the remaining number display portion is moved from the retreat position to the display position together with the swinging of the swing member when the push plate is moved frontward to the proceeding position.

[Claim 3] The magazine according to claim 2,
wherein the mount portion includes a bottom plate portion which supports the commodities; and
the swing member is arranged below the bottom plate portion and is axially supported to the bottom plate portion by a swing shaft which is perpendicular to the bottom plate portion so that the front end of the swing member is swingable within a plane being parallel to the bottom

plate portion.

[Claim 4] The magazine according to claim 2 or claim 3, wherein the remaining number display portion is formed at a front end part of the swing member.

[Claim 5] The magazine according to claim 4, wherein the swing member has a shape elongated in the front-back direction as being shaped to be bent at an intermediate part in the longitudinal direction within a plane being parallel to the bottom plate portion and is arranged beside a movement route of the push plate; and a bent portion of the swing member has an exterior angle (A) at a side of the movement route being below 180 degrees and an exterior angle (B) at an opposite side to the movement route being over 180 degrees.

[Claim 6] The magazine according to claim 5, wherein the bent portion of the swing member is axially supported by the swing shaft.

[Claim 7] The magazine according to claim 5 or claim 6, wherein the remaining number display portion is moved from the retreat position to the display position by pushing away a section of the swing member at the front side from the swing shaft with the push plate when the push plate is moved frontward; and
the remaining number display portion is moved from the display position to the retreat position by pushing away a section of the swing member at the back side from the swing shaft with the push plate when the push plate is moved backward.

[Claim 8] The magazine according to claim 4, wherein the swing member has a shape elongated in the front-back direction as being shaped to be bent at an intermediate part in the longitudinal direction within a plane being parallel to the bottom plate portion and is arranged beside a movement route of the push plate; and a bent portion of the swing member has an exterior angle (A) at a side of the movement route being over 180 degrees.

[Claim 9] The magazine according to claim 8, wherein a section of the swing member at the back side from the bent portion is axially supported by the swing shaft.

[Claim 10] The magazine according to any one of claims 2 to 9 further comprising a temporal fixing portion,
wherein the temporal fixing portion temporally fixes the swing member to the mount portion at a swing angle where the remaining number

display portion is located at the retreat position while the number of the commodities on the mount portion is larger than the predetermined number N.

[Claim 11] The magazine according to claim 10,
wherein the temporal fixing portion is an urging portion which urges the swing member in a direction that the remaining number display portion is to be close to the retreat position.

[Claim 12] The magazine according to claim 11,
wherein the urging portion includes a spring.

[Claim 13] The magazine according to claim 10,
wherein the temporal fixing portion is an attraction maintaining portion which maintains to attract the swing member to the mount portion at the swing angle where the remaining number display portion is located at the retreat position.

[Claim 14] The magazine according to claim 13,
wherein the attraction maintaining portion comprises a first magnetic body arranged at the swing member and a second magnetic body arranged at the mount portion to be attracted mutually to the first magnetic body.

[Claim 15] The magazine according to claim 2 or claim 3, further comprising a link of which front end is moved frontward and backward together with swinging of the swing member as being connected to the swing member;
wherein the remaining number display portion is formed at a front end part of the link.

[Claim 16] The magazine according to claim 2, further comprising:
a front-back moving member which is arranged to be movable frontward and backward relatively to the mount portion;
a frontward urging portion which urges the front-back moving member frontward relatively to the mount portion; and
a moving member holding portion which holds the front-back moving member by being engaged with the front-back moving member in a state that the front-back moving member is moved backward against urging of the frontward urging portion;
wherein the remaining number display portion is formed at the front-back moving member; and
the swing member releases engagement between the moving member holding portion and the front-back moving member and moves the

front-back moving member frontward in accordance with urging of the frontward urging portion owing to swinging when the push plate is moved frontward.

[Claim 17] The magazine according to claim 1, further comprising attracting portions arranged respectively at the moving portion and the push plate as being mutually attracted to be capable of being engaged and disengaged;
wherein the attracting portions are mutually attracted at the retreat position and are mutually separated at the display position.

[Claim 18] The magazine according to claim 17, further comprising a proceeding restriction portion which restricts proceeding of the moving portion;
wherein the push plate and the moving portion are integrally moved frontward as the attracting portions being mutually attracted when the push plate is located backward from the proceeding position in the vicinity of the front end of the mount portion; and
the attracting portions are mutually separated owing to proceeding restriction of the moving portion by the proceeding restriction portion when the push plate moved frontward arrives at the proceeding position.

[Claim 19] The magazine according to claim 18,
wherein the attracting portions comprise a first magnetic body arranged at the push plate and a second magnetic body arranged at the moving portion to be mutually attracted to the first magnetic body.

[Claim 20] The magazine according to claim 18 or claim 19,
wherein the proceeding restriction portion is structured as closing the front end of the mount portion; and
the remaining number display portion is visible by seeing through the front end of the mount portion.

[Claim 21] The magazine according to any one of claims 18 to 20,
wherein the proceeding restriction portion restricts proceeding of the moving portion at the time when the remaining number display portion is moved frontward to the front side from the front end of the mount portion.

[Claim 22] The magazine according to any one of claims 18 to 21,
wherein the mount portion is formed to have a semi-housing shape which is opened upward;
the push plate is arranged to be moved frontward and backward along the bottom plate portion in a state of being interlocked with the bottom

plate portion of the mount portion; and
the moving portion is slidingly moved frontward and backward in a state of being held between the bottom plate portion and a receiving portion which supports the moving portion as being arranged below the bottom plate portion.

[Claim 23] The magazine according to claim 22,
wherein the mount portion is formed to be multi-bottomed while the upper bottom is the bottom plate portion and the lower bottom is the receiving portion.

[Claim 24] The magazine according to claim 23,
wherein the receiving portion is a receiving claw portion arranged at a plurality of positions of a circumferential part of a front-back movement area of the moving portion in a plane view.

[Claim 25] The magazine according to claim 19,
wherein the first magnetic body is arranged at a lower face of the push plate and the second magnetic body is arranged at an upper face of the moving portion.

[Claim 26] The magazine according to claim 19,
wherein the mount portion is formed to have a semi-housing shape which is opened upward;
the push plate is arranged to be moved frontward and backward along the bottom plate portion in a state of being interlocked with the bottom plate portion of the mount portion;
the moving portion is slidingly moved frontward and backward in a state of being held between the bottom plate portion and a receiving portion which supports the moving portion as being arranged below the bottom plate portion;
a slit is formed at the bottom plate portion as being extended in the front-back direction;
a moving portion opening extended in the front-back direction is formed at a section of the moving portion located below the slit;
a bottom part of the push plate vertically penetrates the slit and the moving portion opening;
the slit and an edge part of the moving portion opening are vertically sandwiched by the bottom plate portion and the moving portion;
the push plate is moved frontward and backward along the slit;
the second magnetic body is arranged at a lower face of the moving portion; and

the first magnetic body is arranged at an upper face of the bottom part of the push plate at a section which nips the edge part from the lower side of the moving portion.

[Claim 27] The magazine according to any one of claims 1 to 26, wherein the remaining number display portion is a colored portion of which color is different from that of a section around the remaining number display portion of the magazine.

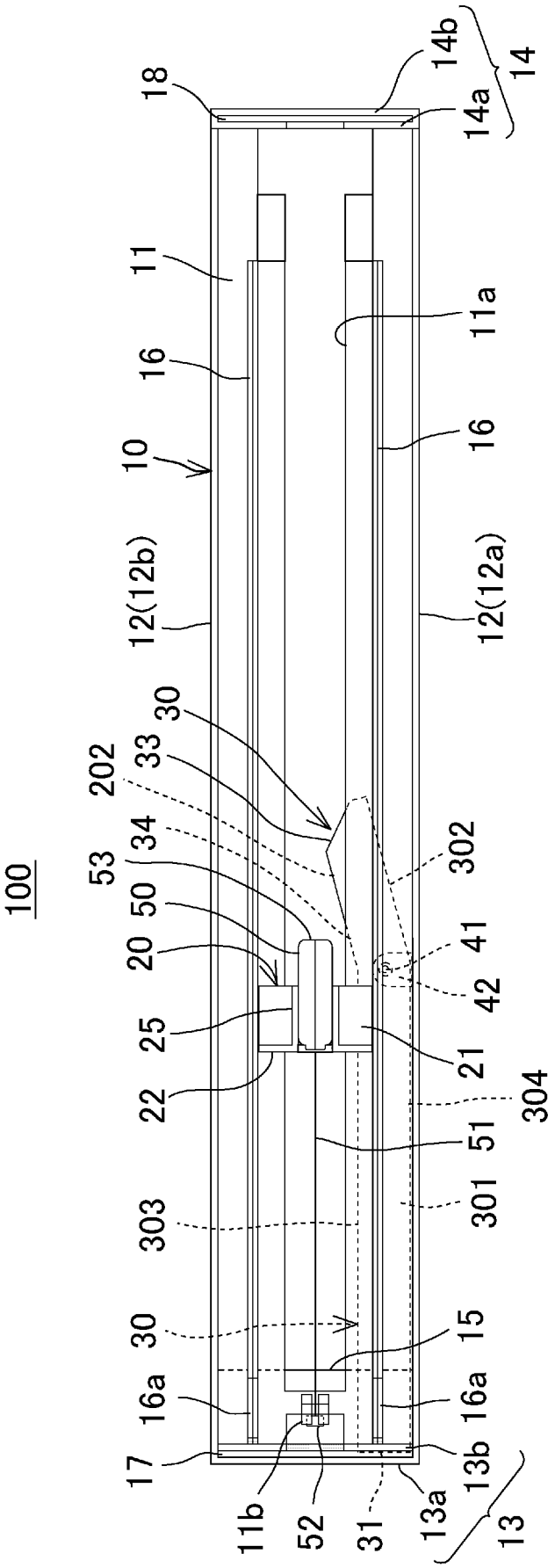
[Claim 28] The magazine according to any one of claims 1 to 27, wherein a display window which enables the remaining number display portion located at the display position to be visible from the front side and a shielding portion which shields front viewing of the remaining number display portion located at the retreat position are formed at a front end part of the mount portion.

[Claim 29] The magazine according to any one of claims 1 to 28, wherein a number subtracting the predetermined number N from a maximum mount number of the commodities onto the mount portion is ten or larger.

[Claim 30] The magazine according to any one of claims 1 to 29, wherein the predetermined number N is four or larger.

[Fig. 1]

FIG. 1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14
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12(12a)
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50
20
25
22
302
41
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21
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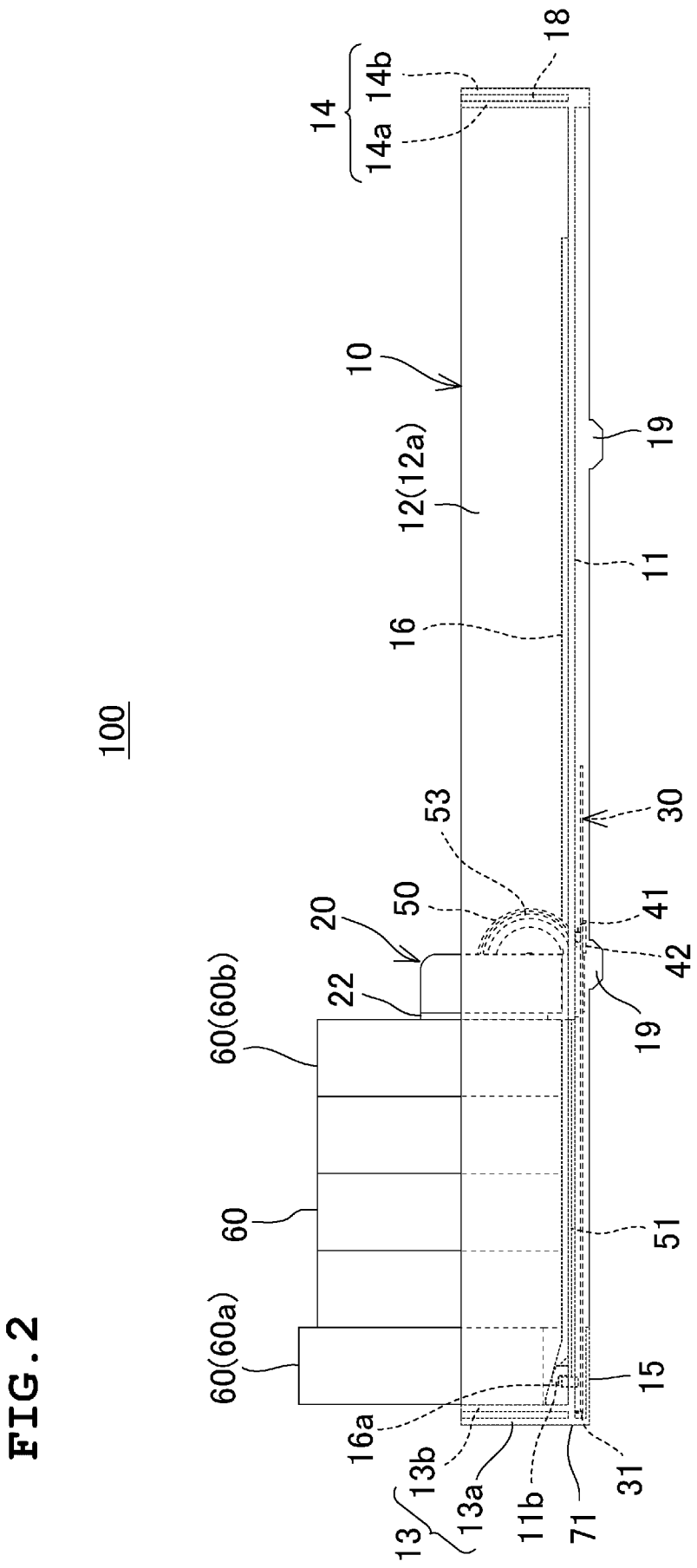
17
13b
11b
52
31
13a
13

[Fig. 2]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14b
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19
11
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41
20
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22
19
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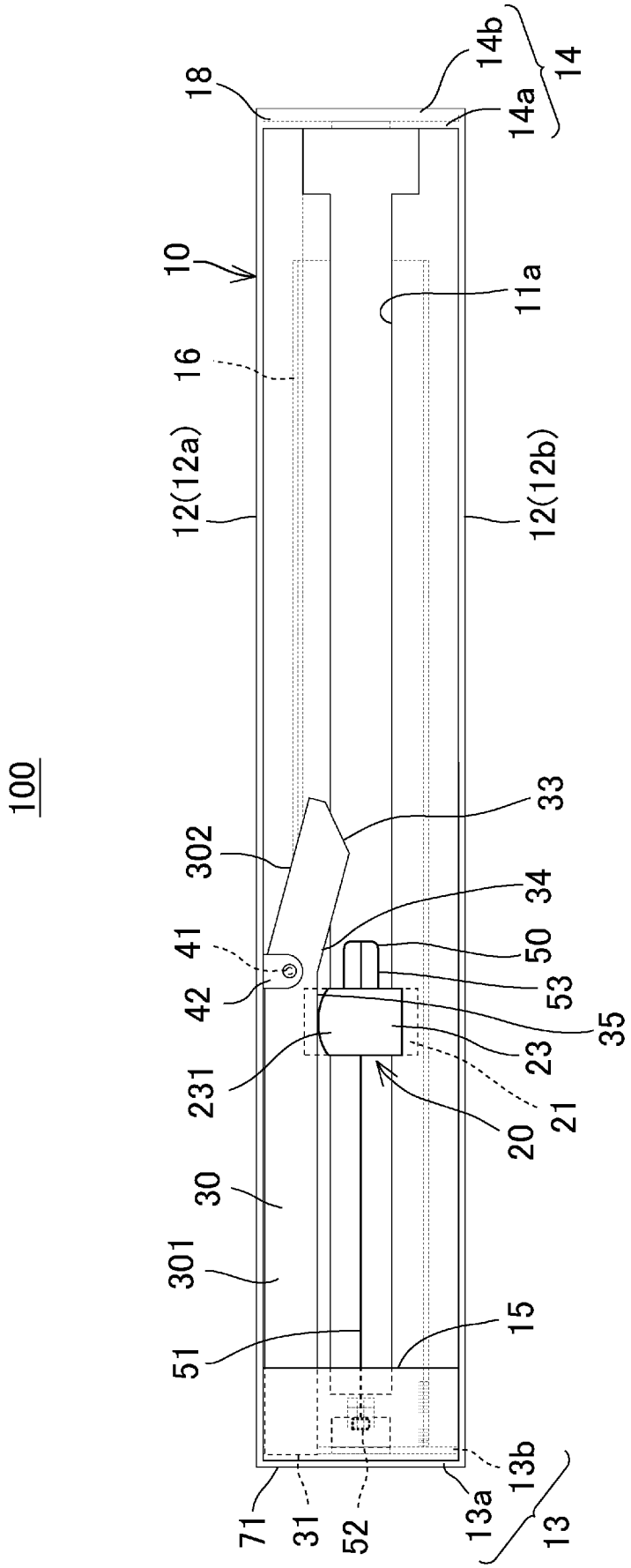
16a
13b
13a
11b
71
31
13

FIG. 2

[Fig. 3]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14a
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11a
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53
35
231
23
21
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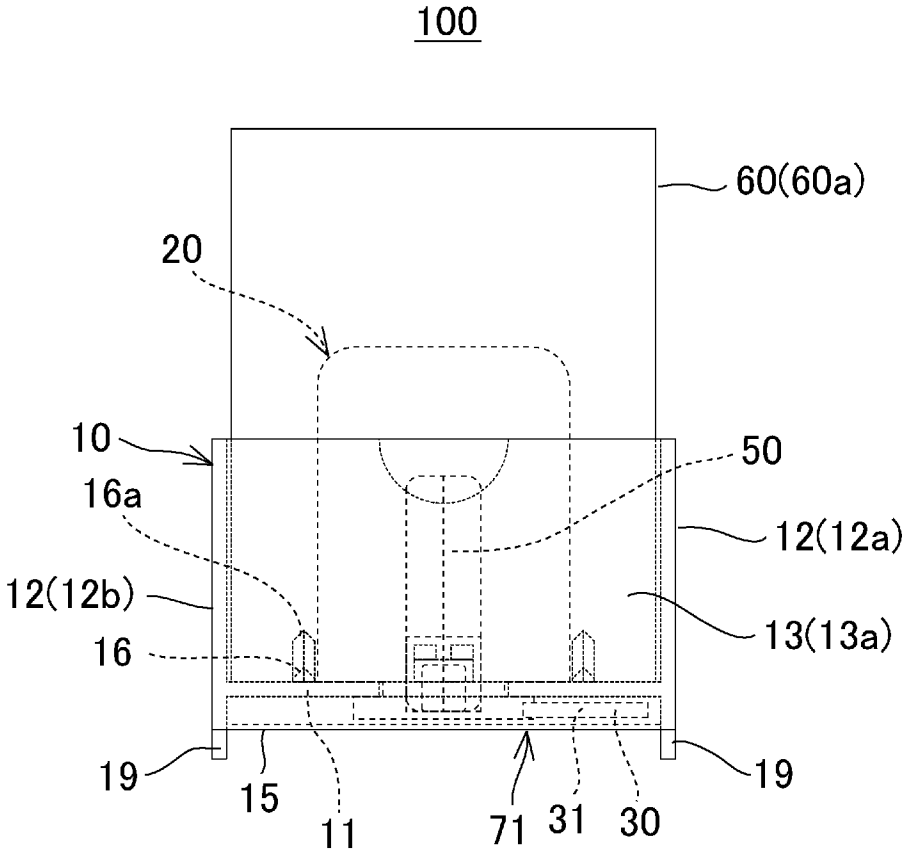
13b
71
31
52
13a
13

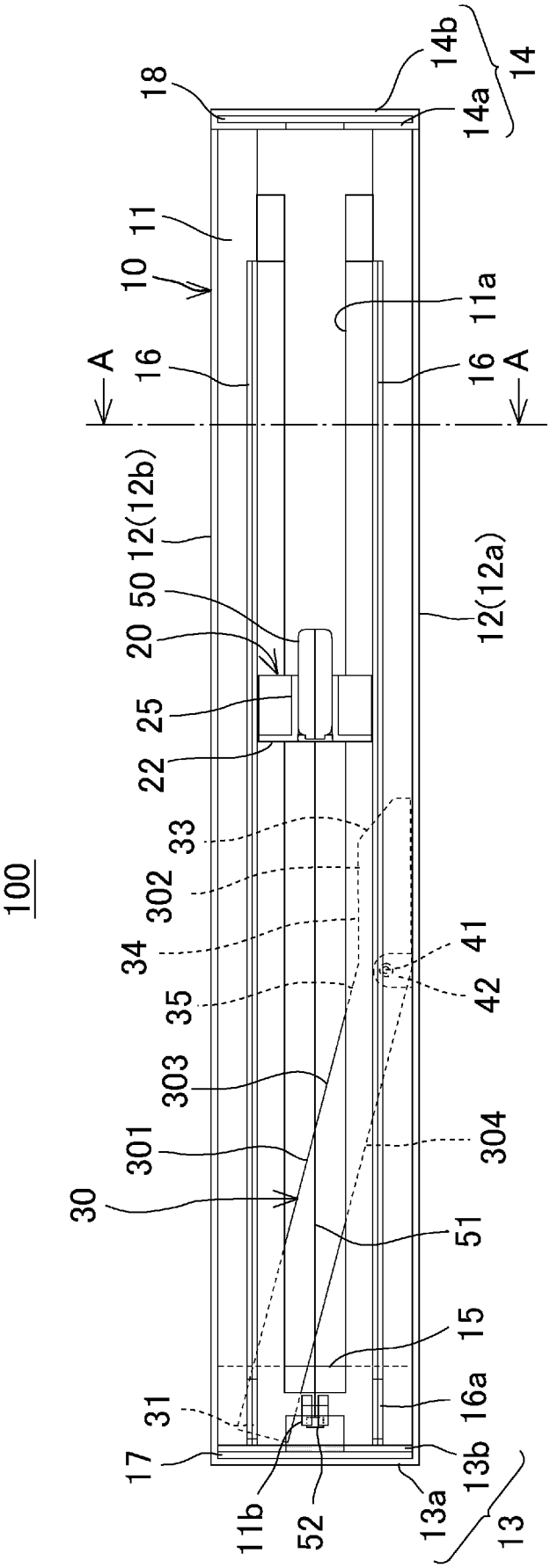
FIG. 3

[Fig. 4]

FIG. 4



[Fig. 5]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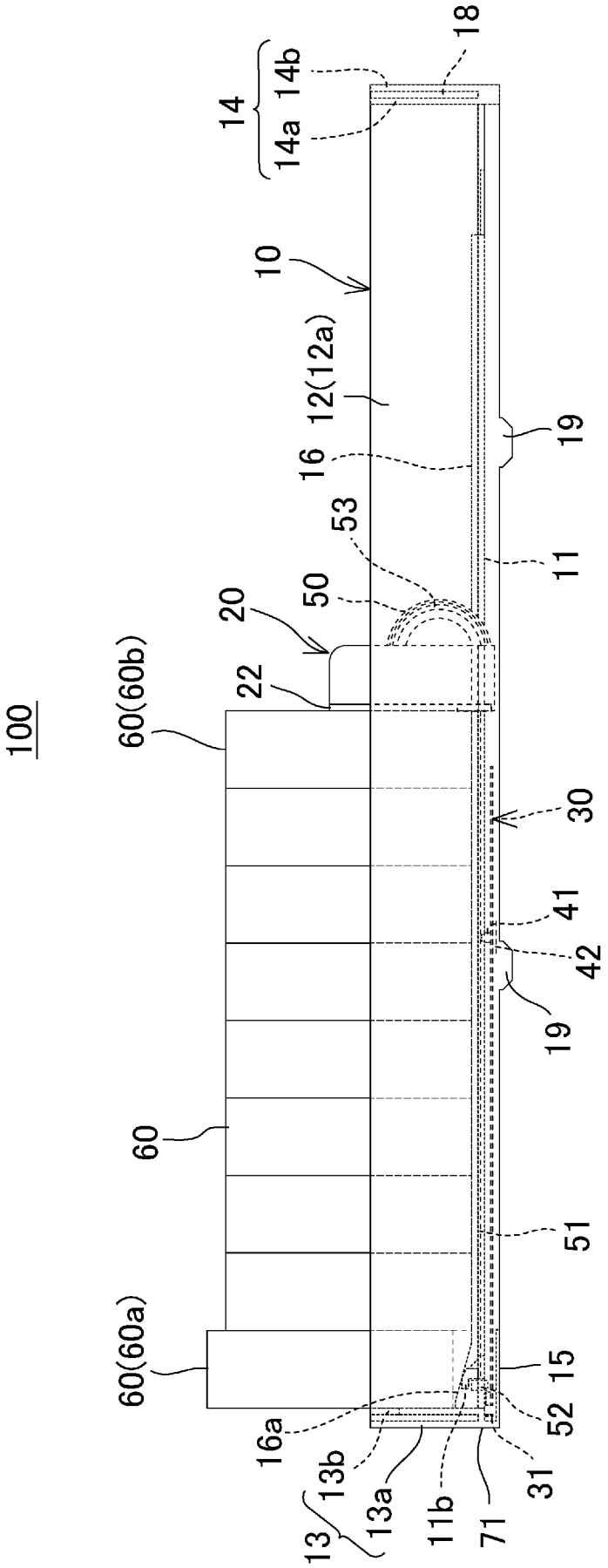
33
302
34
41
42
35
303
304
301
30
51
15
31
16a
17
13b
11b
52
13a
13

FIG. 5

[Fig. 6]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60
60(60a)
22
20
50
53
16
12(12a)
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14a
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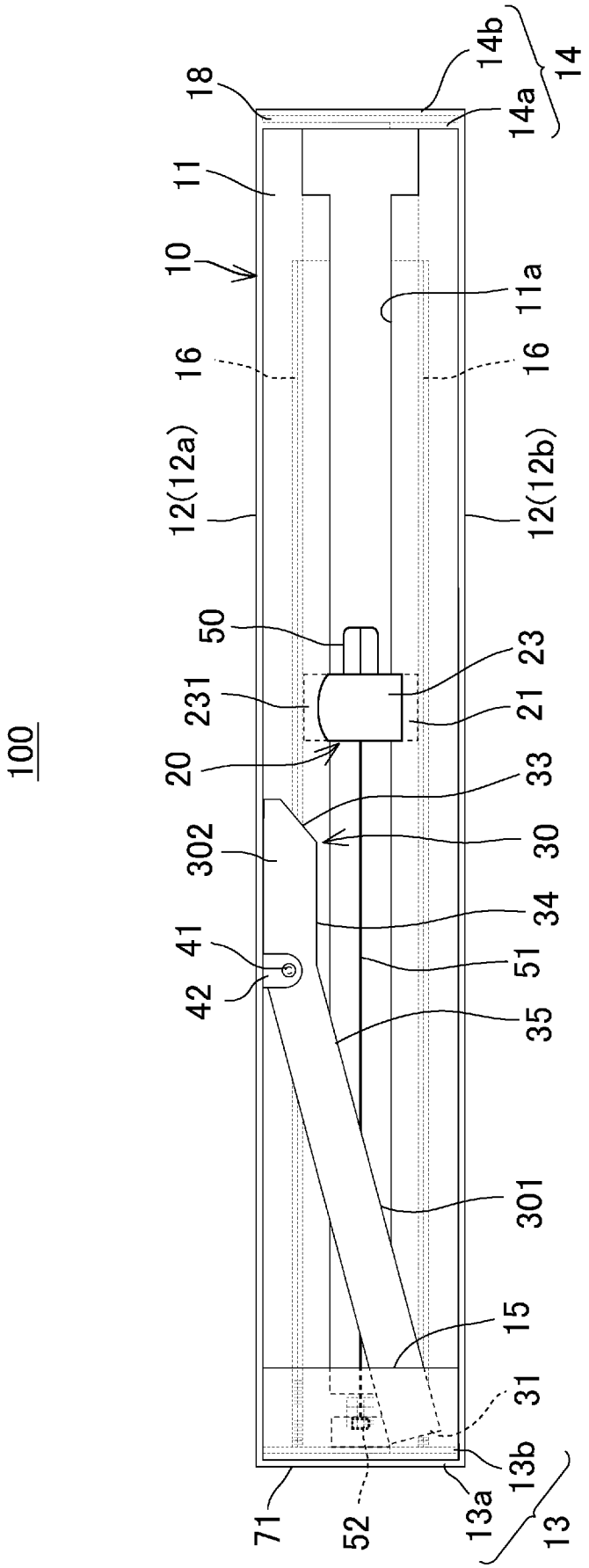
11b
13a
13b
13
16a

FIG. 6

[Fig. 7]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12(12b)
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33
302
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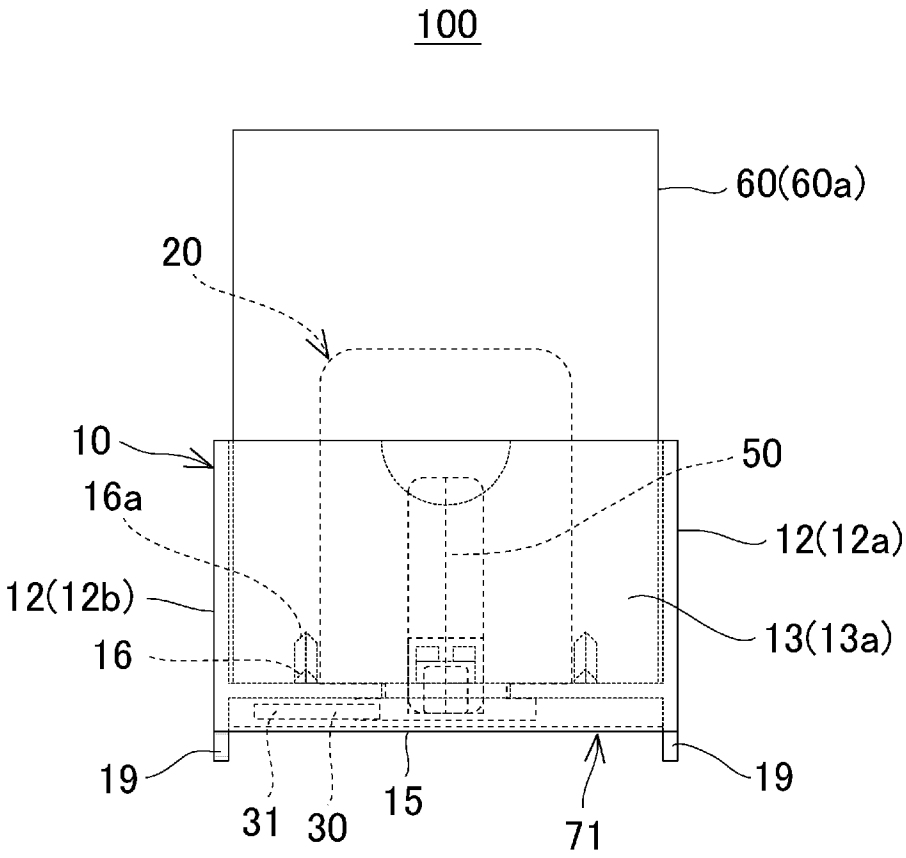
31
13b
71
52
13a
13

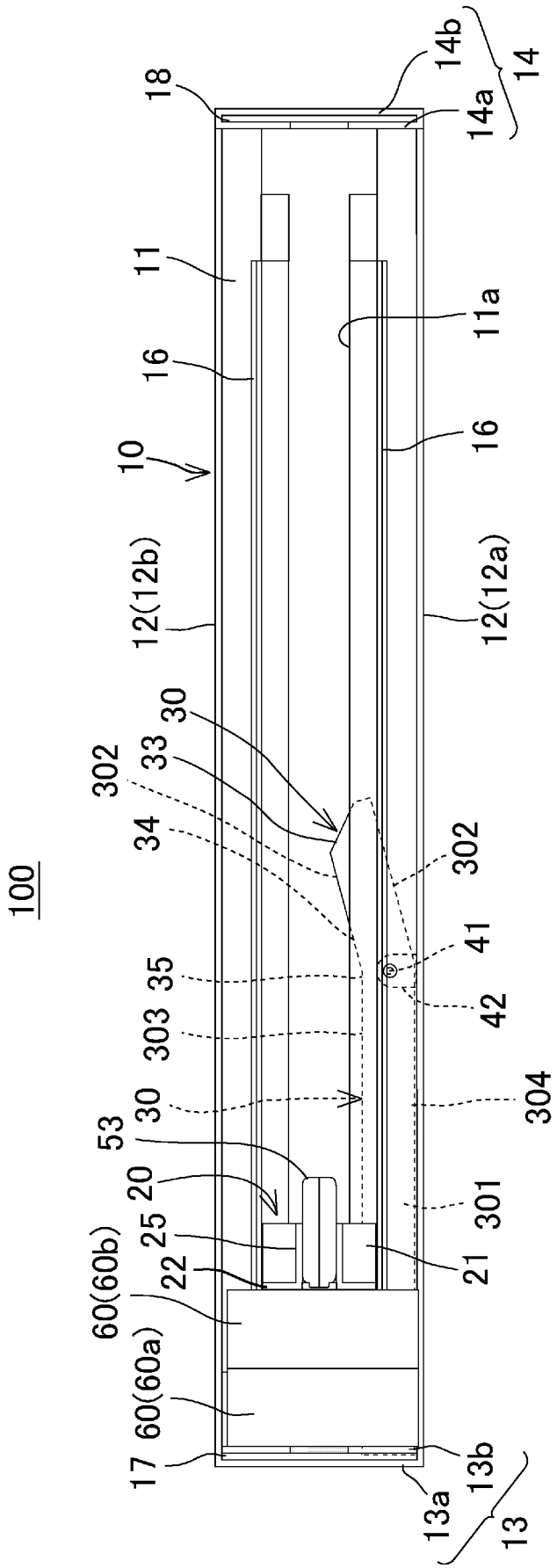
FIG. 7

[Fig. 8]

FIG. 8



[Fig. 9]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12(12a)
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304
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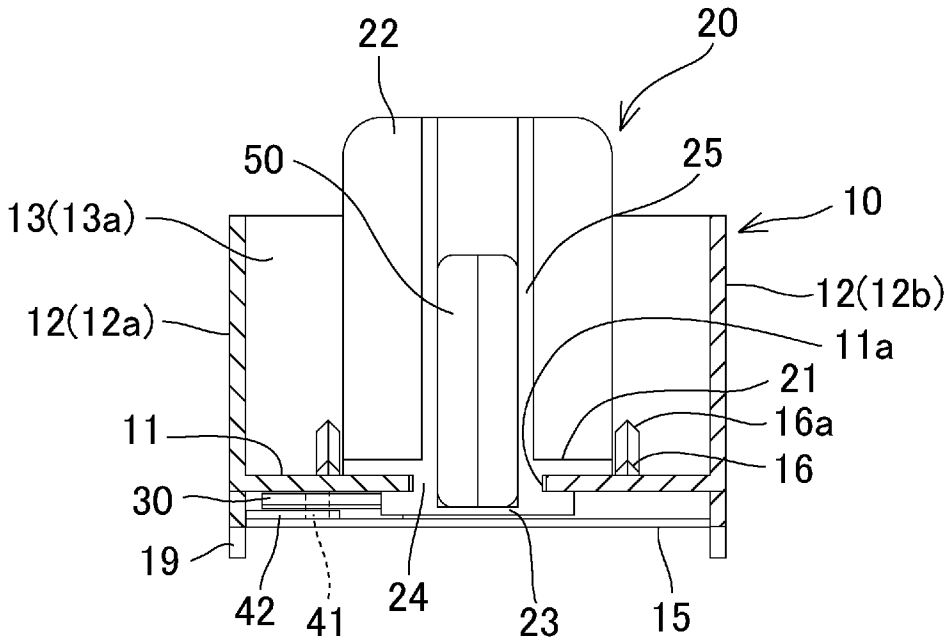
60(60b)
60(60a)
17
13b
13a
13

FIG. 9

[Fig. 10]

FIG.10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13(13a)
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[Fig. 11]

FIG.11A

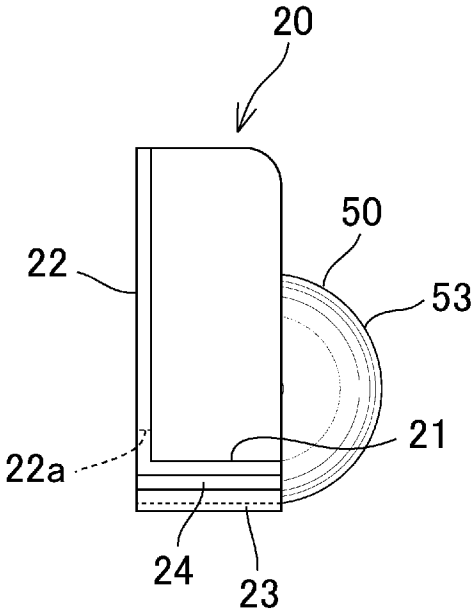
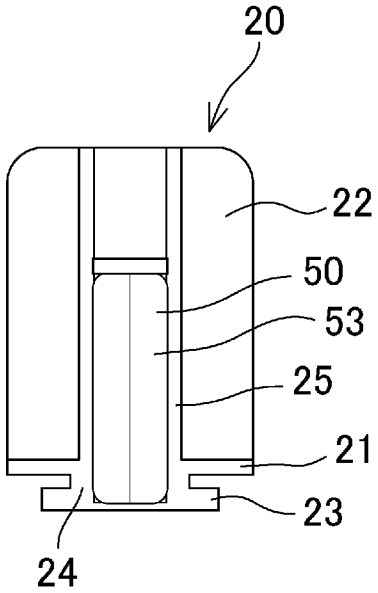
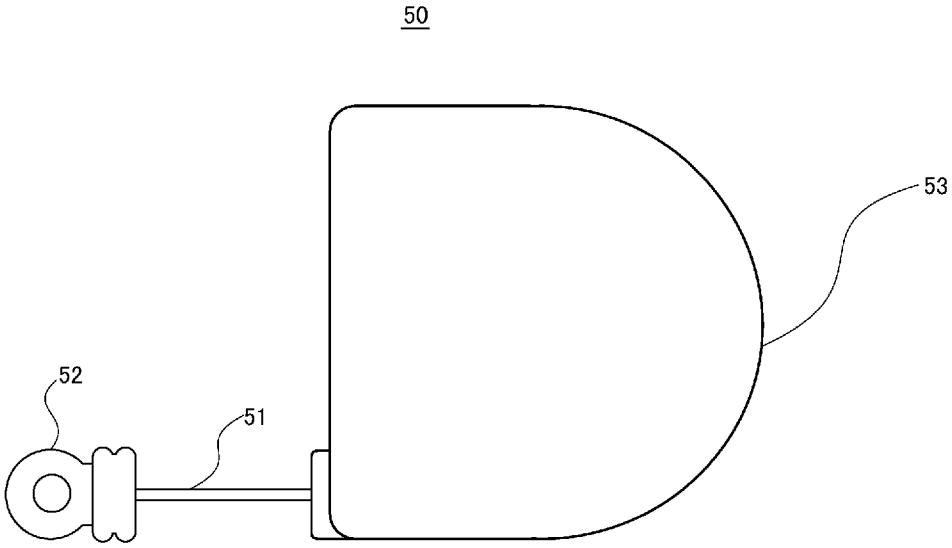


FIG.11B



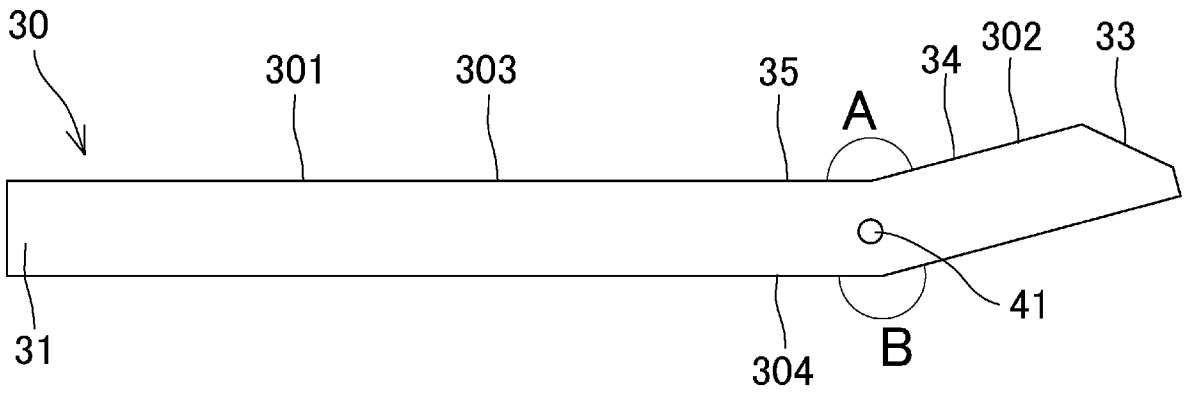
[Fig. 12]

FIG.12



[Fig. 13]

FIG.13



[Fig. 14]

FIG.14A

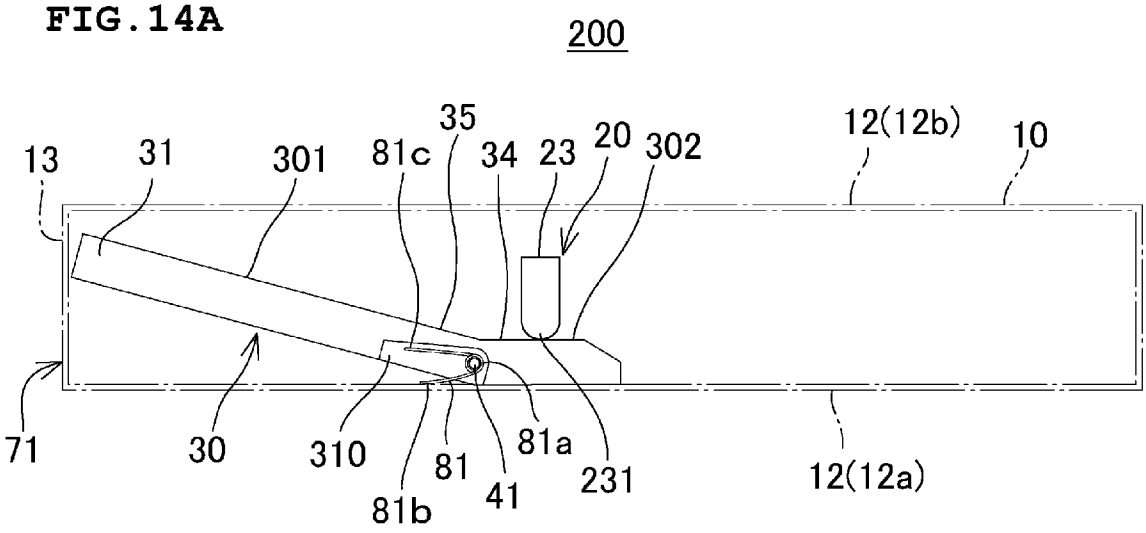
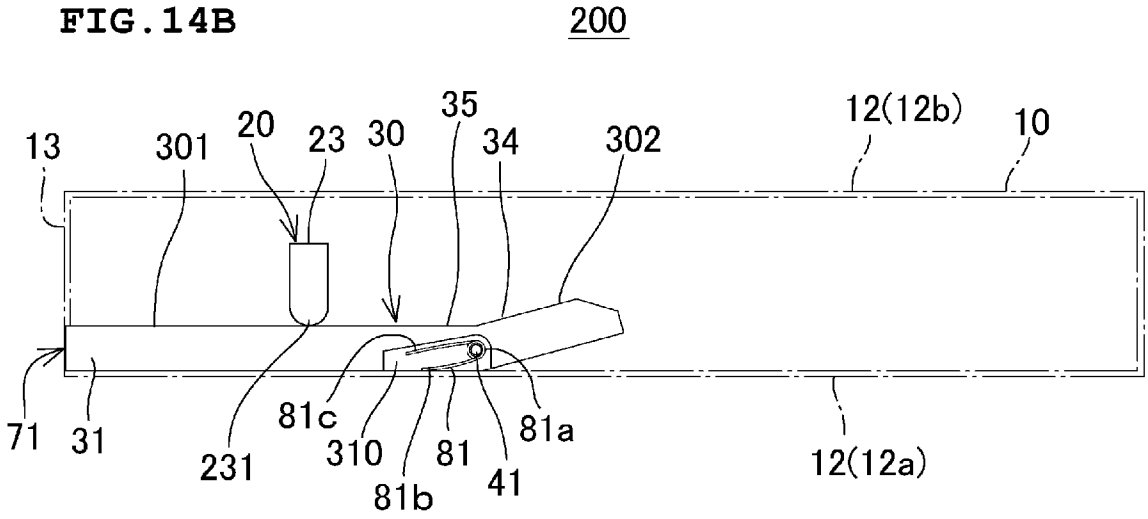


FIG.14B



[Fig. 15]

FIG.15A

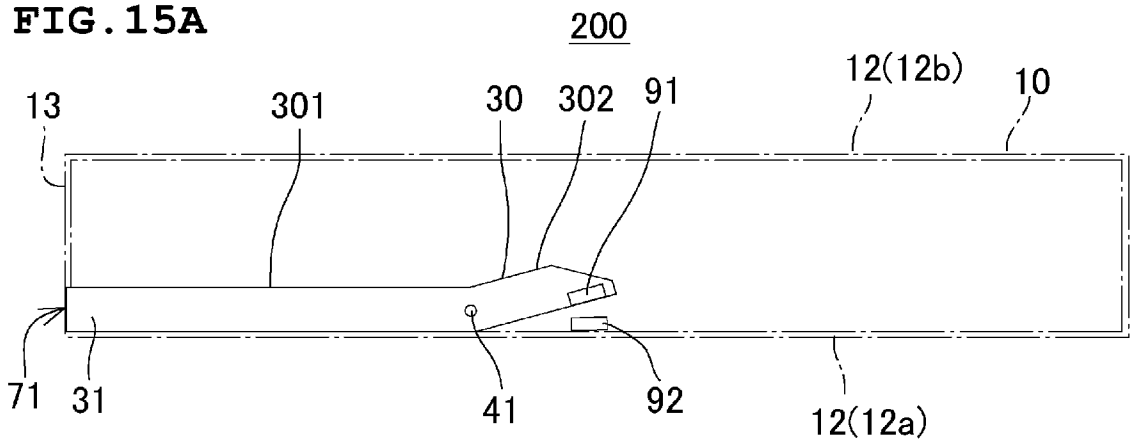


FIG.15B

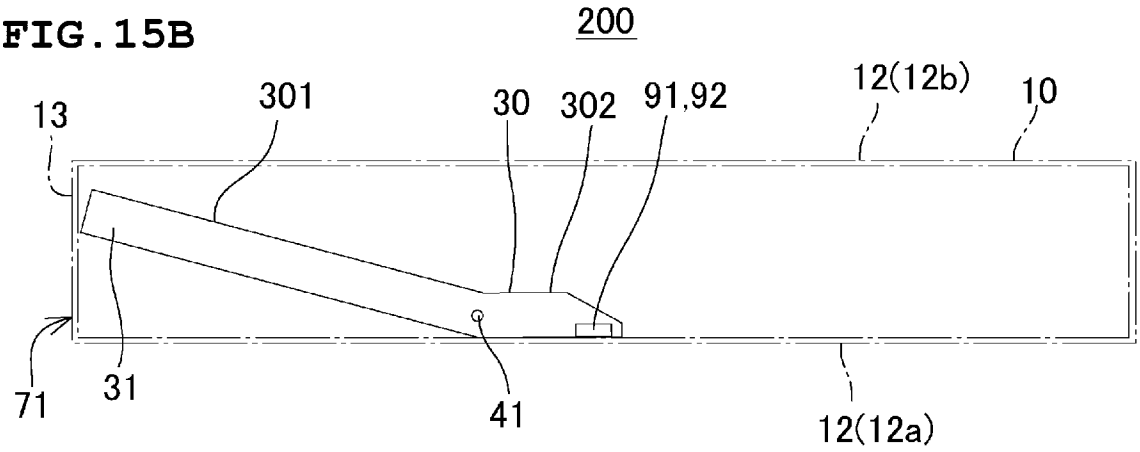


FIG.15C

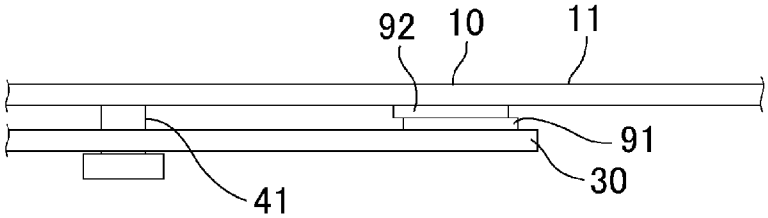
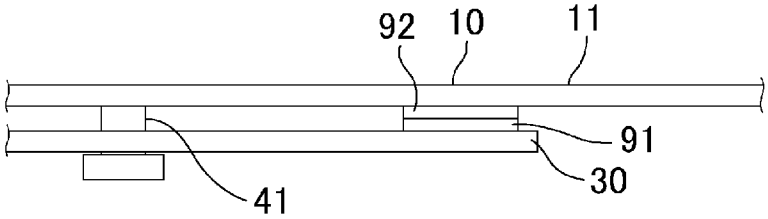


FIG.15D



[Fig. 16]

FIG.16A

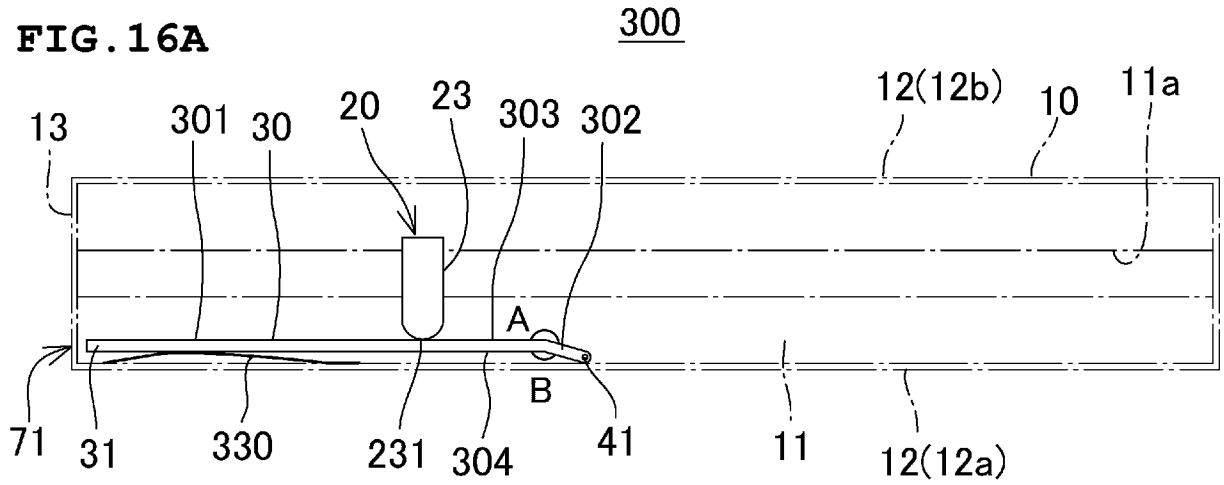
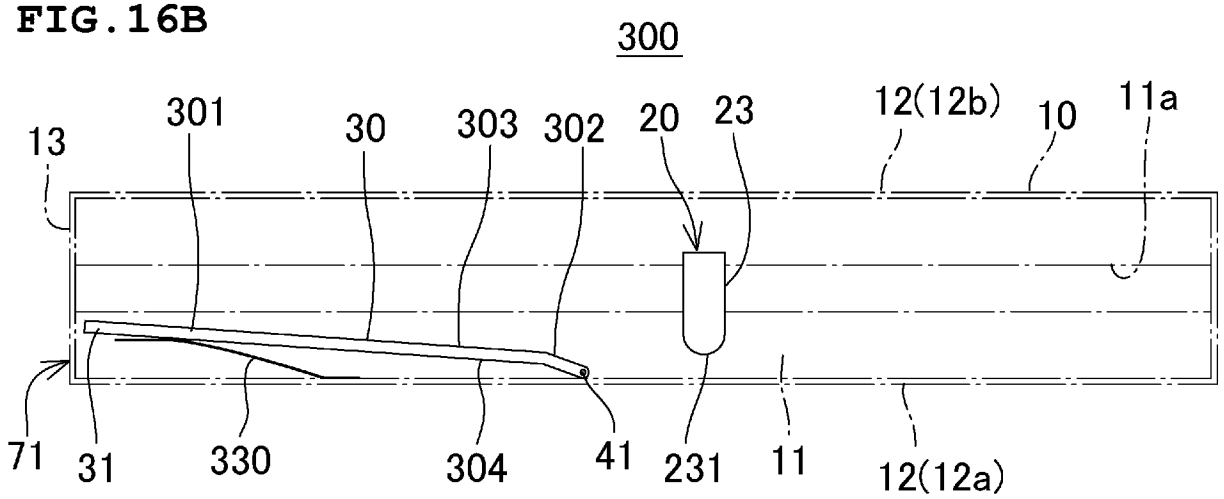


FIG.16B



[Fig. 17]

FIG.17A

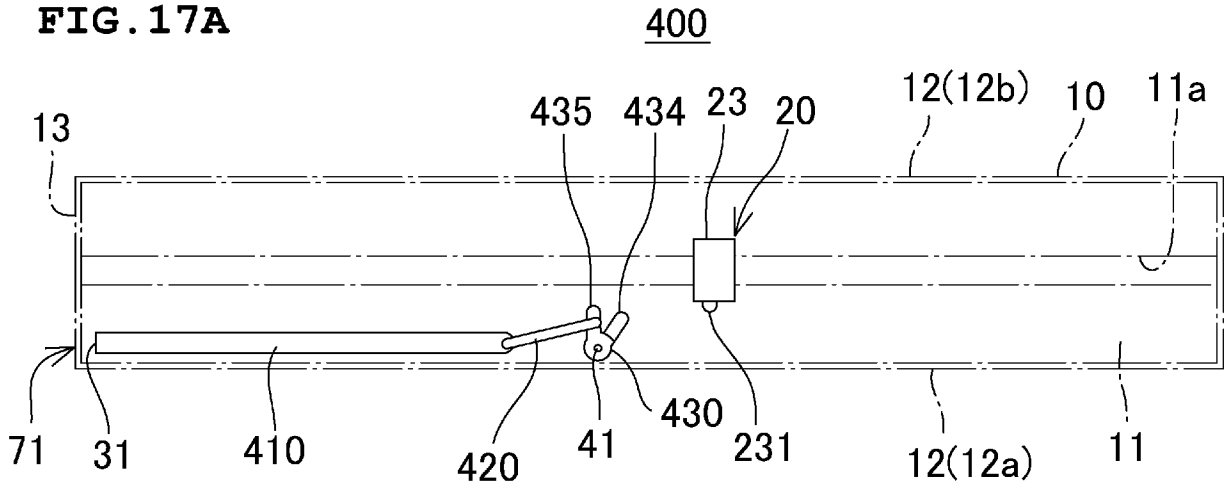
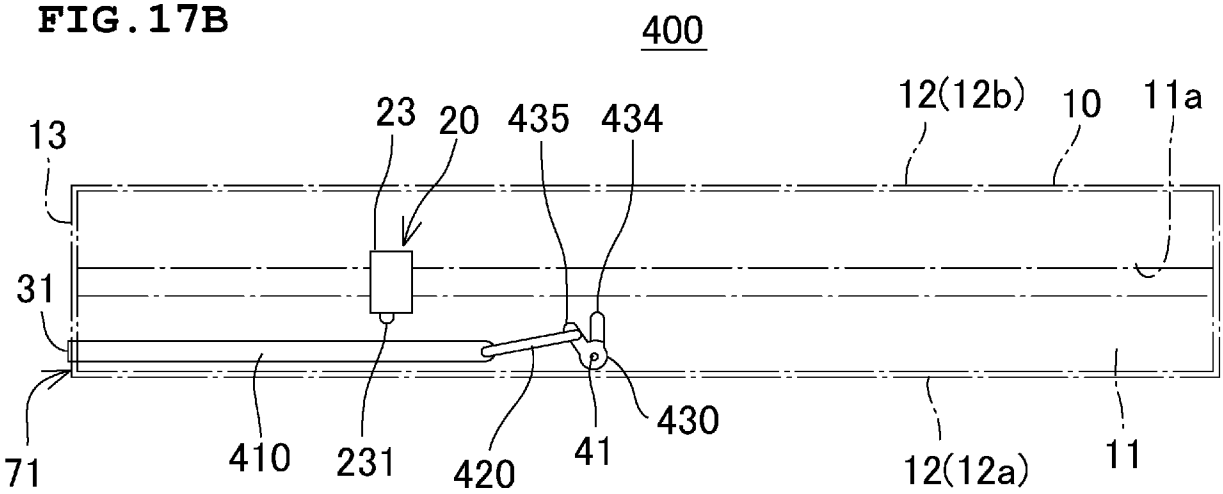


FIG.17B



[Fig. 18]

FIG.18A

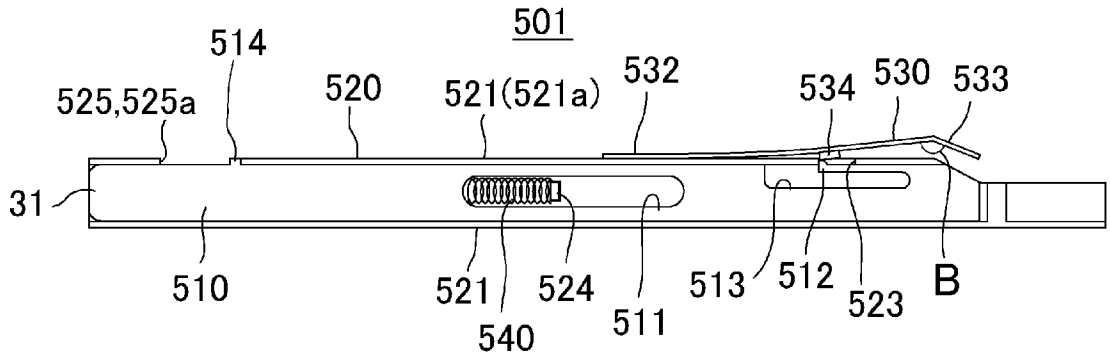


FIG.18B

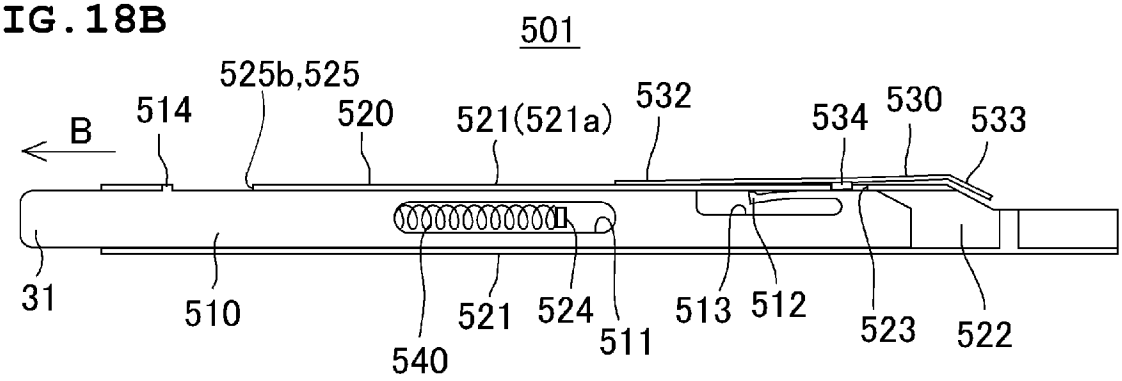
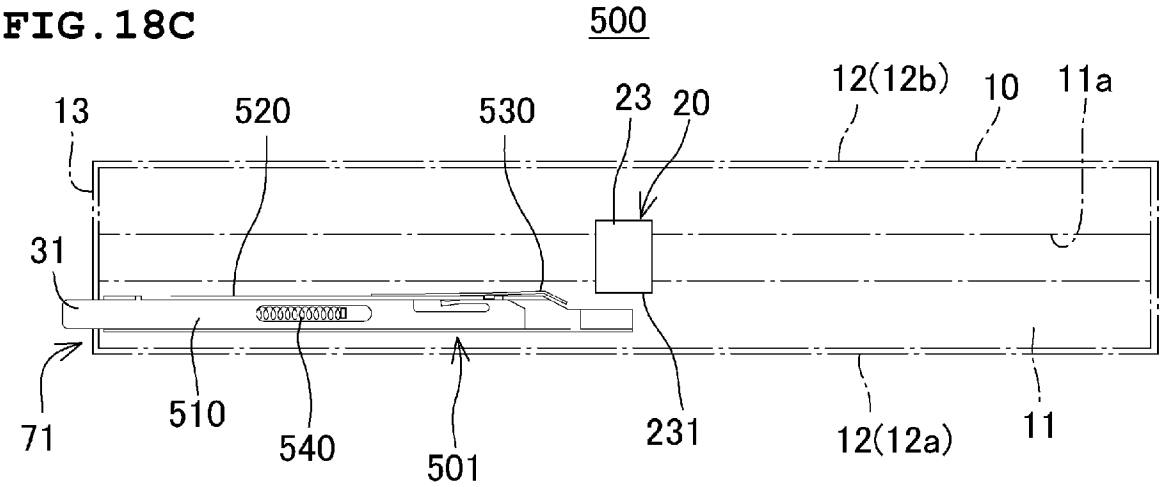


FIG.18C



[Fig. 19]

FIG.19A

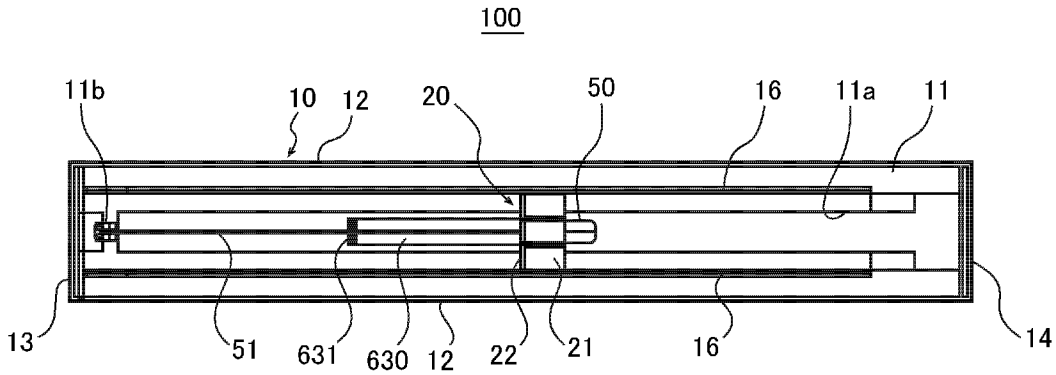
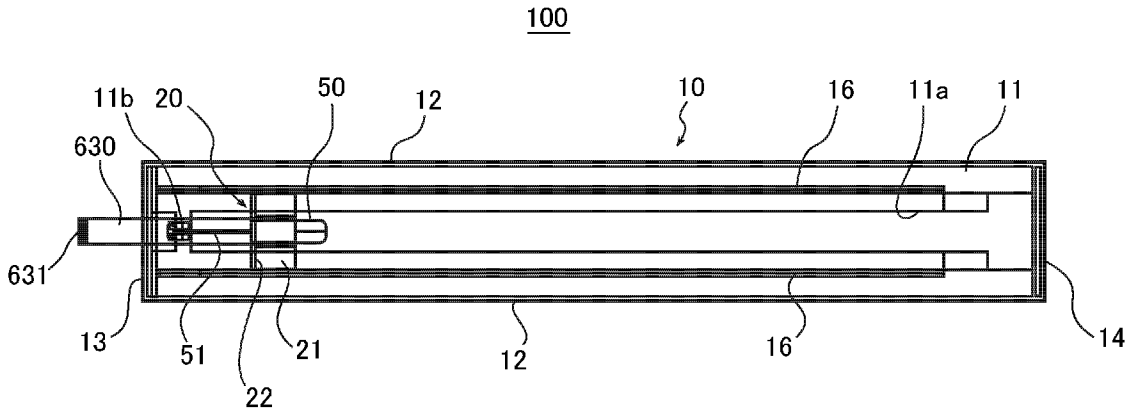
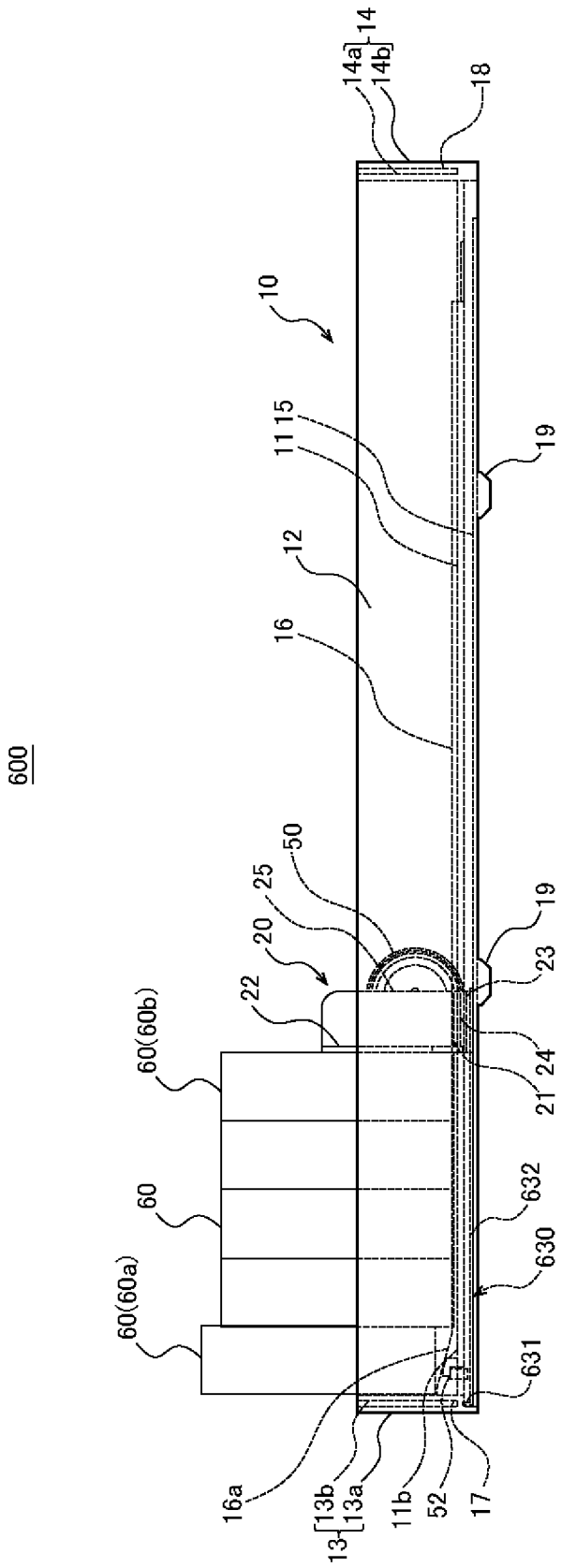


FIG.19B



[Fig. 20]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60(60a)
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16a
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13b
13a
11b
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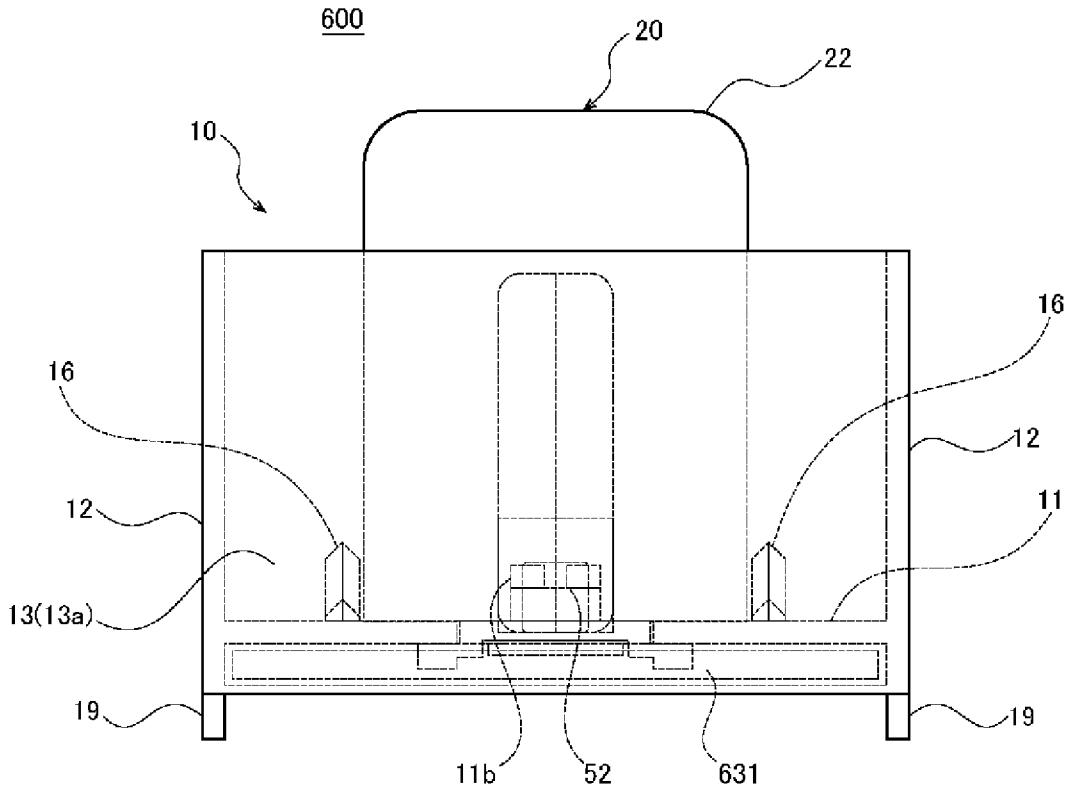
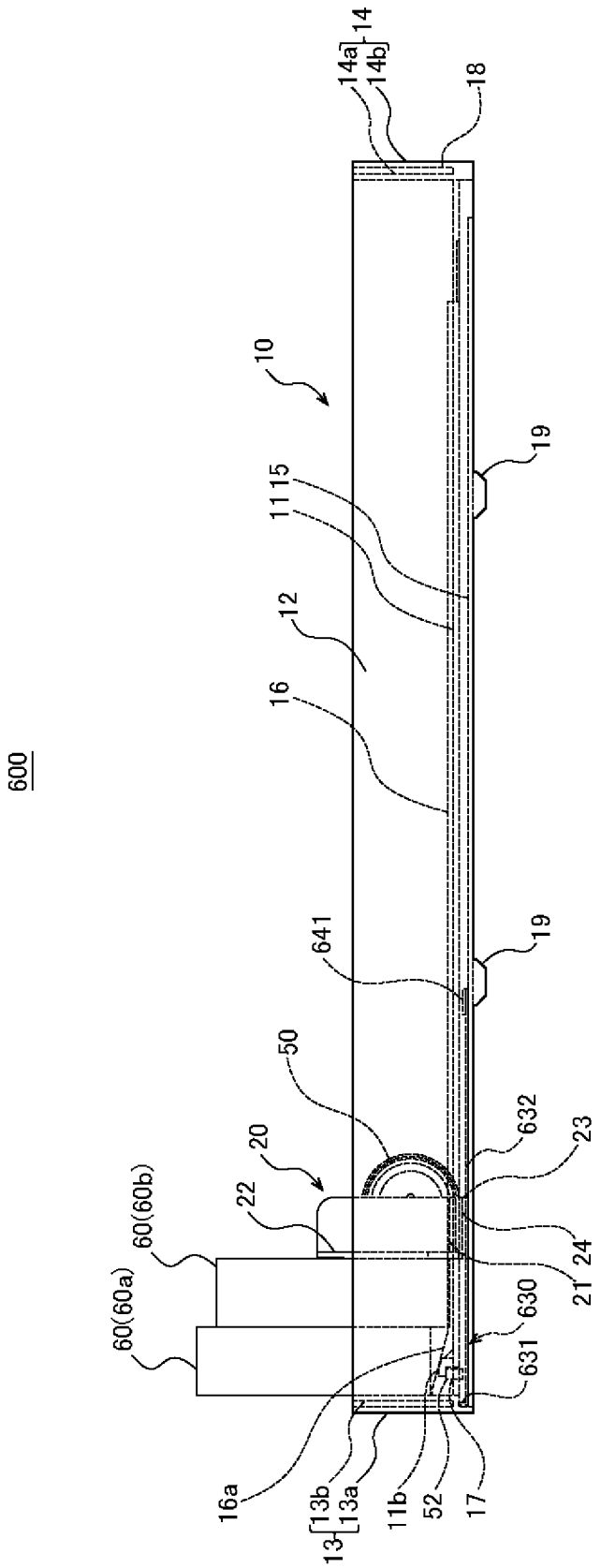
FIG. 20

[Fig. 21]

FIG.21



[Fig. 22]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60(60b)
60(60a)
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16a
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13b
13a
11b
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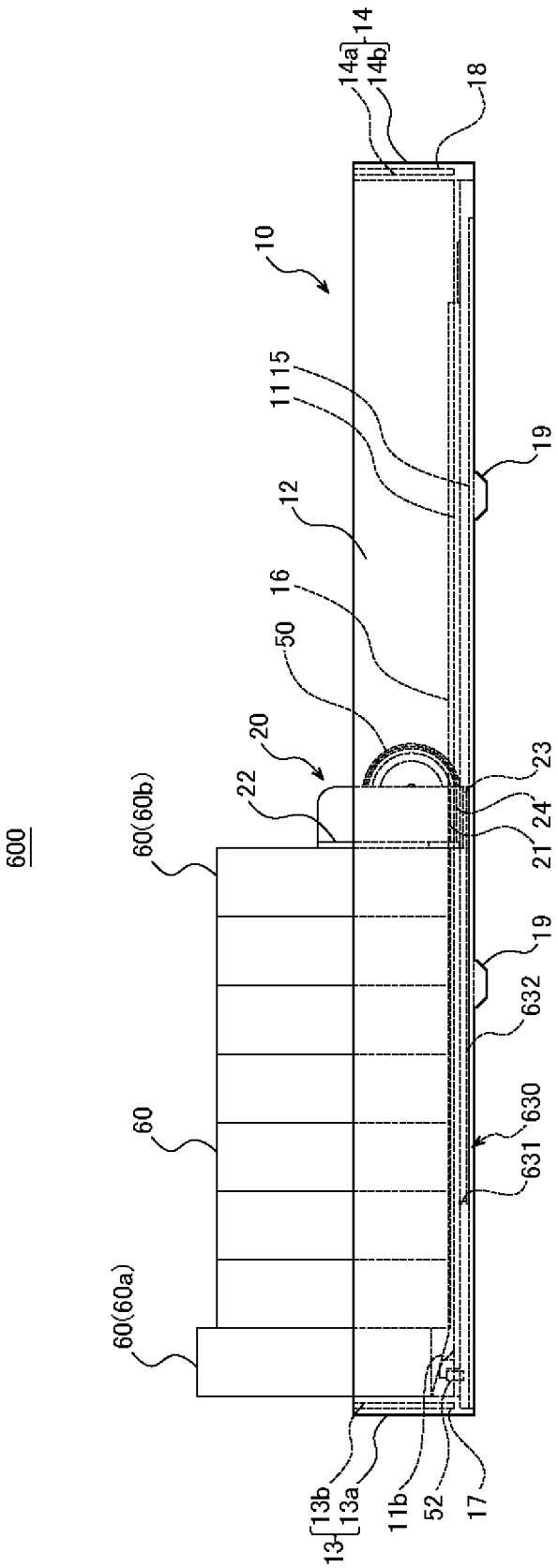
17

FIG. 22

[Fig. 23]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14b
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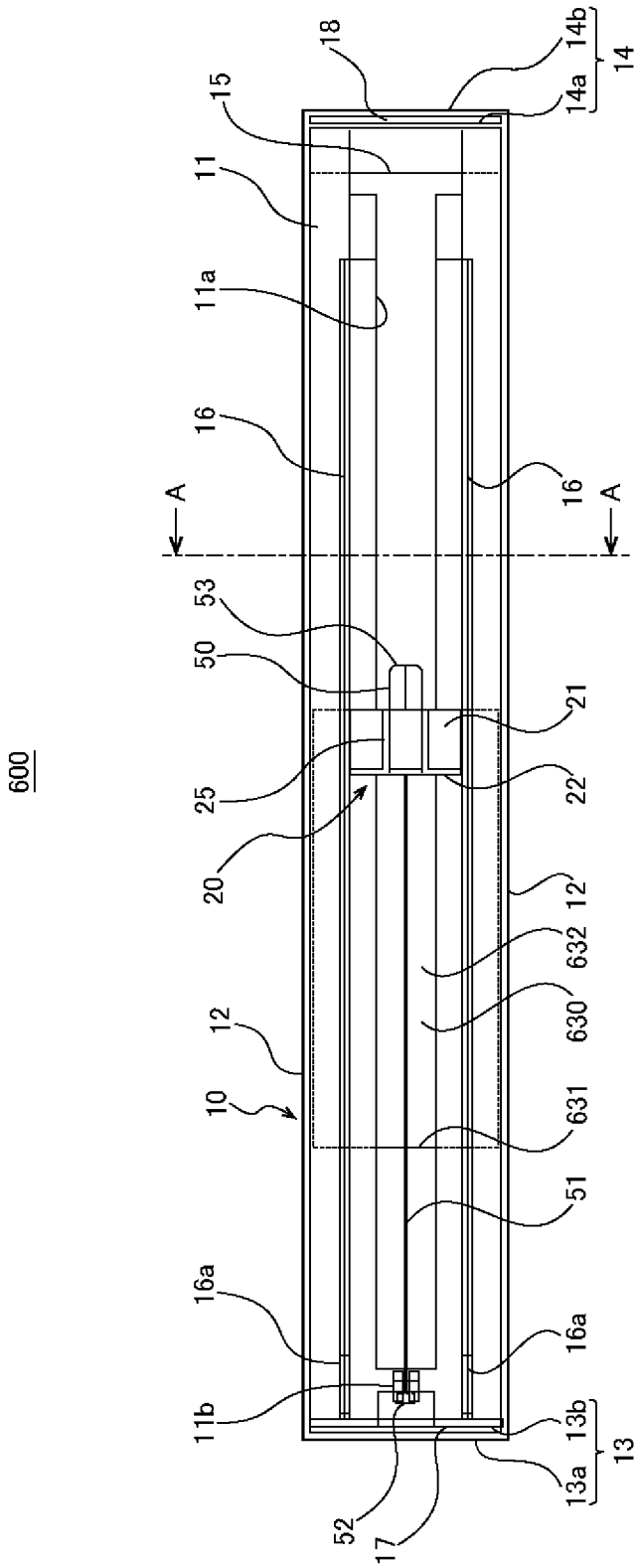
13b
13a
11b
52
17

FIG. 23

[Fig. 24]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13a
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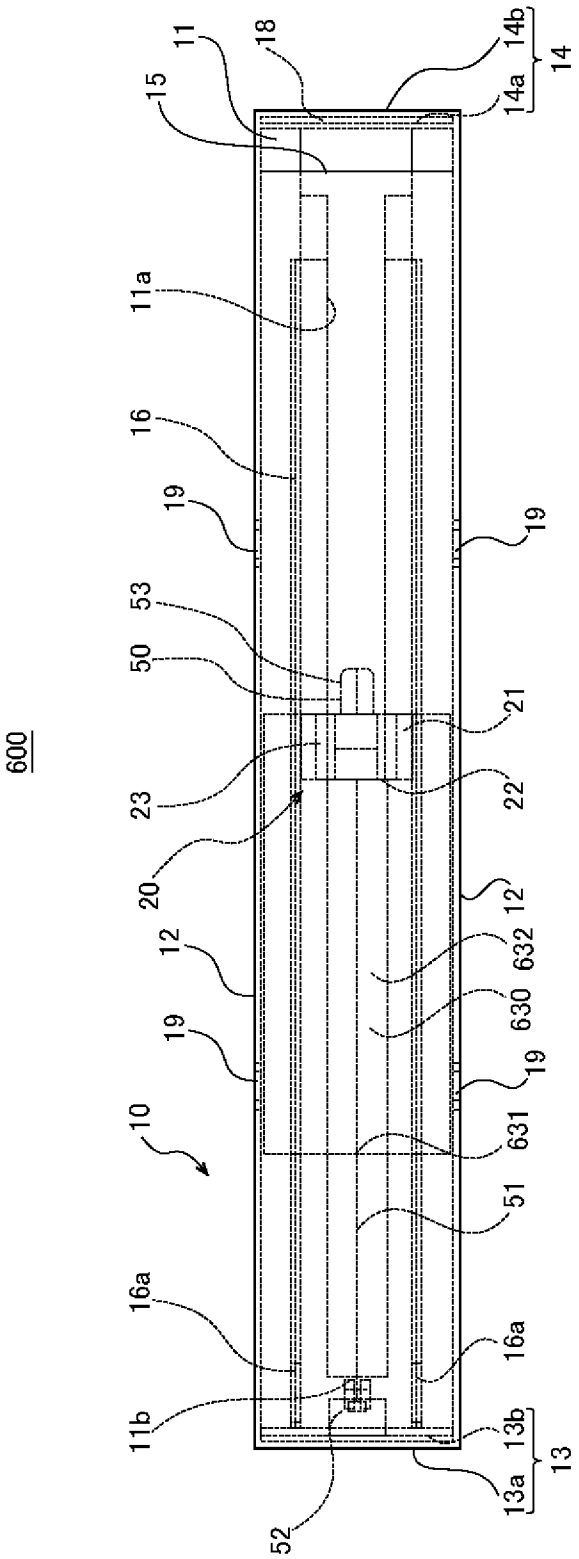
FIG. 24

[Fig. 25]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13a
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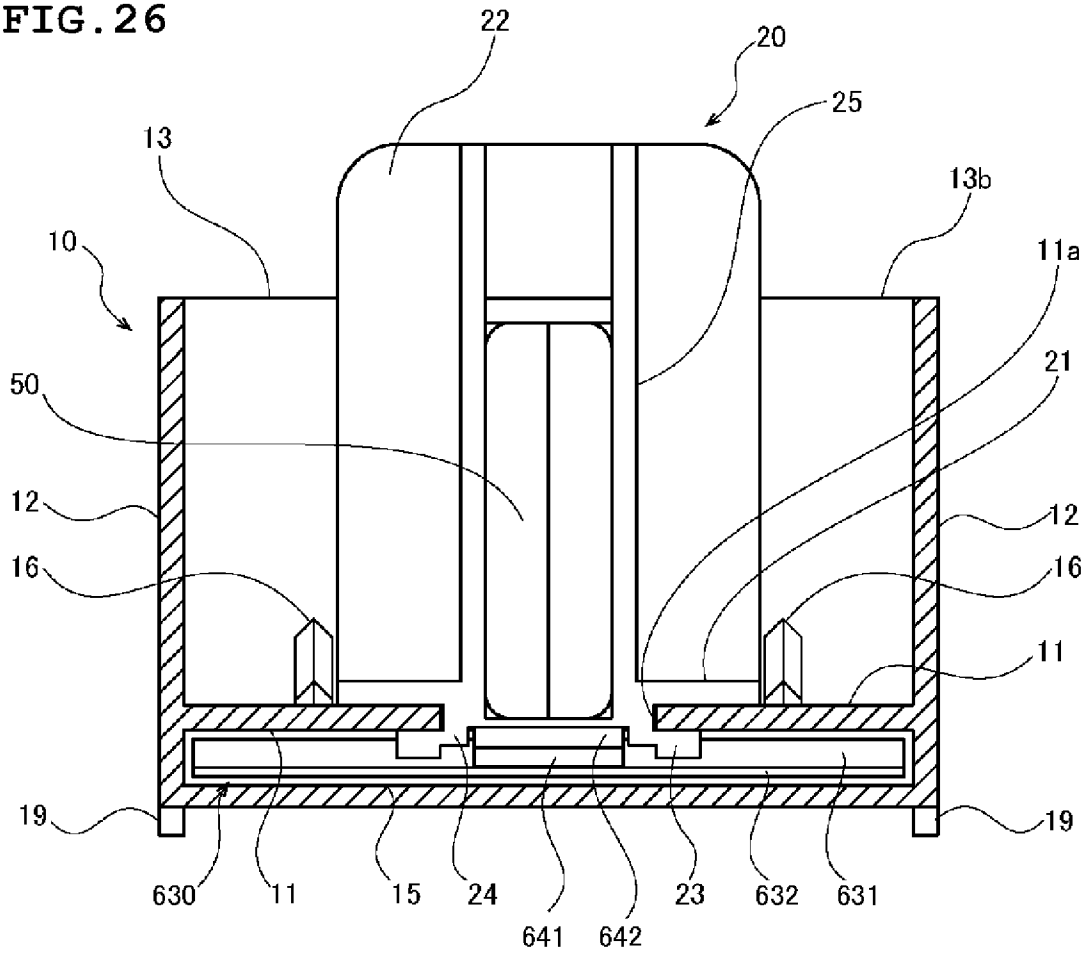
FIG. 25

[Fig. 26]

FIG.26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[Fig. 27]

FIG.27B

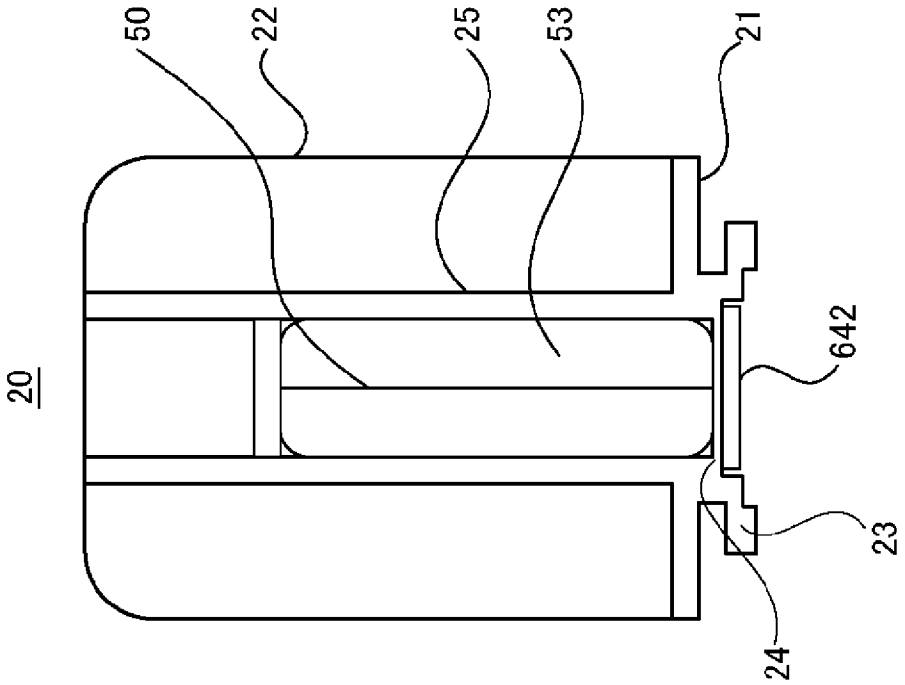
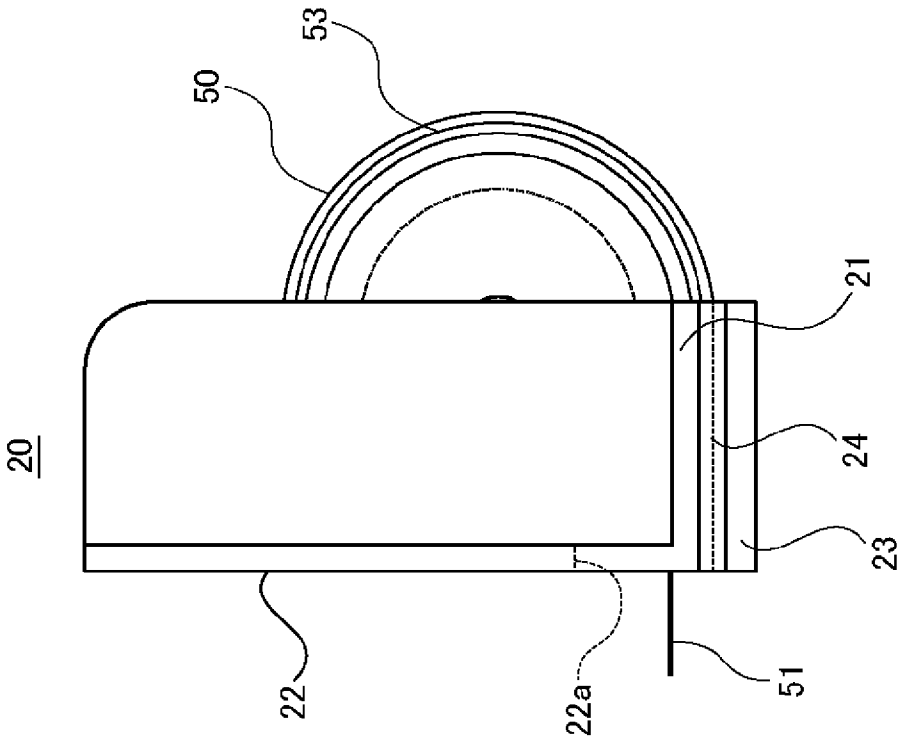


FIG.27A



[Fig. 28]

FIG.28A

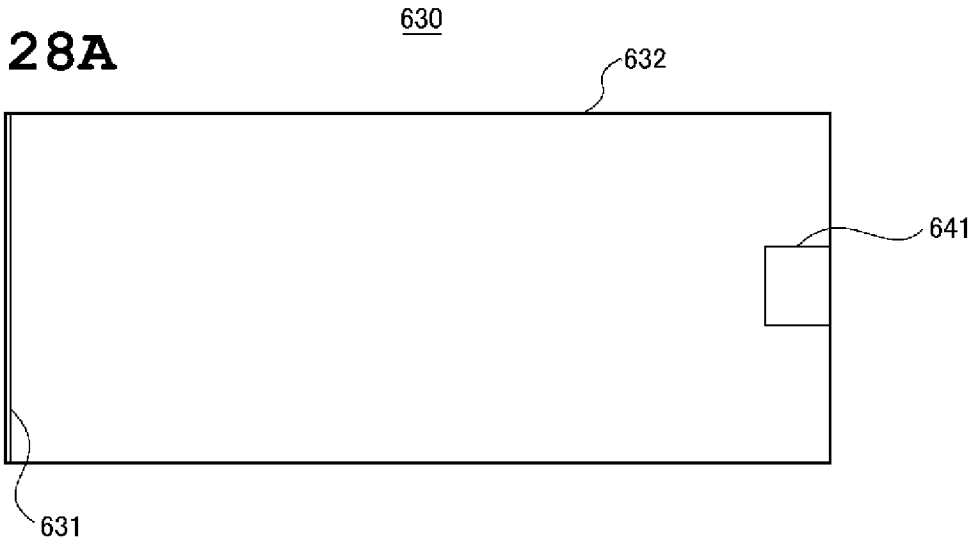
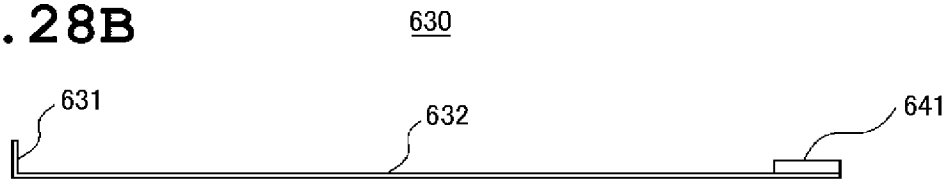


FIG.28B



[Fig. 29]

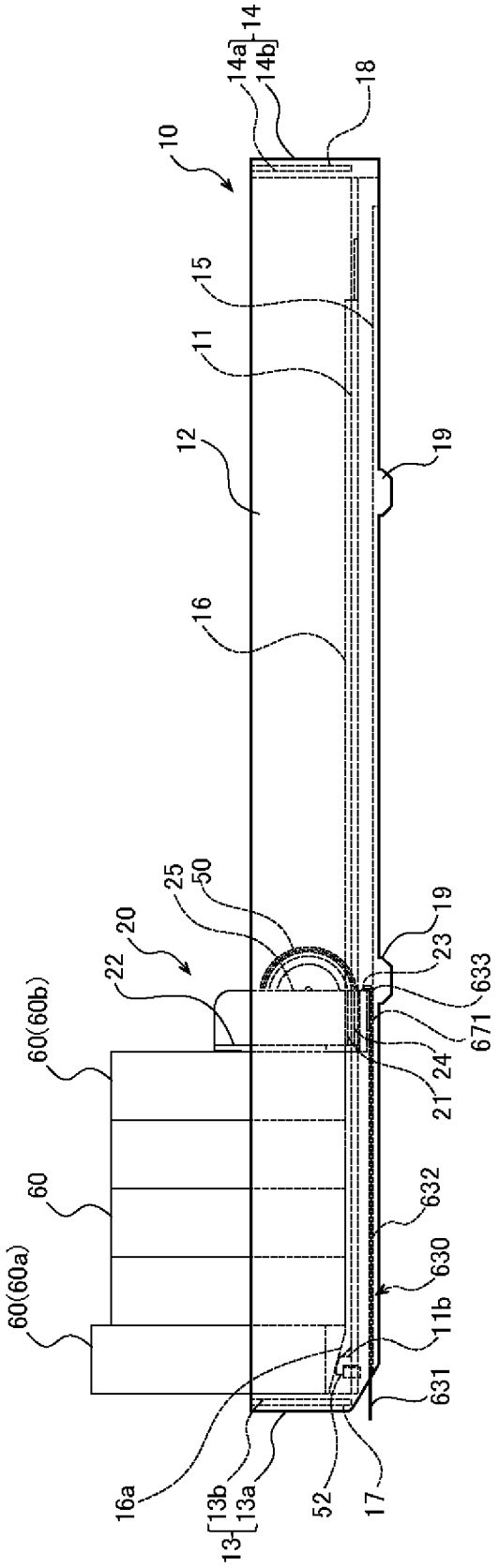

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FIG. 29

[Fig. 30]

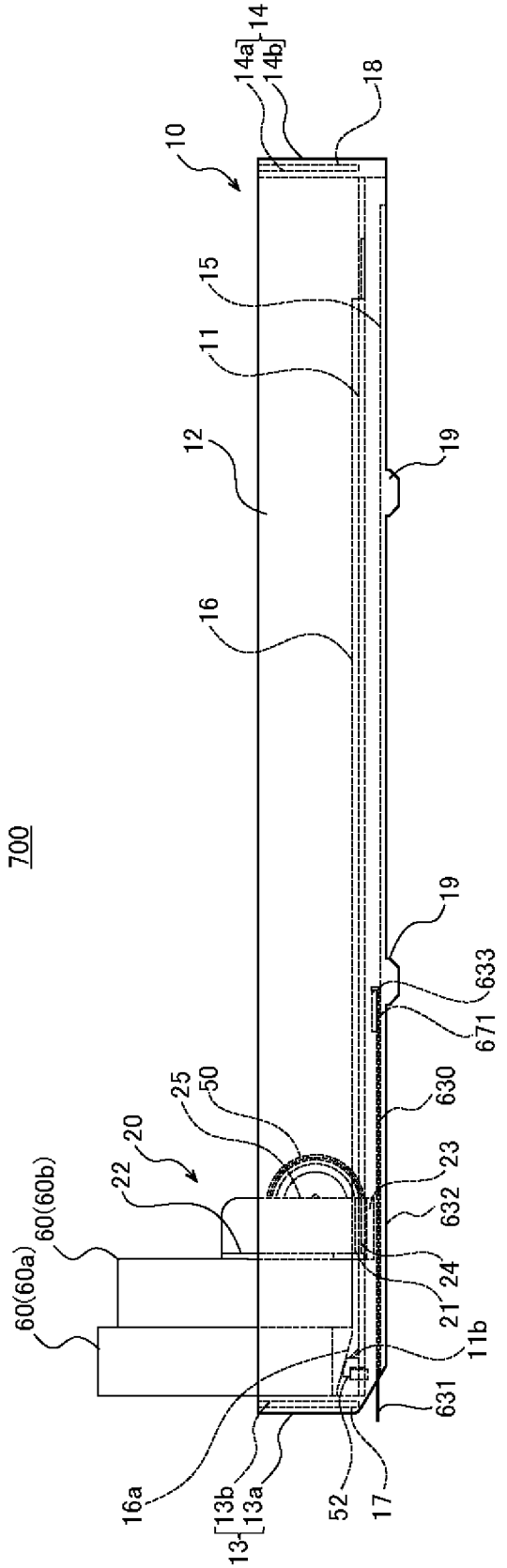
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FIG. 30

[Fig. 31]

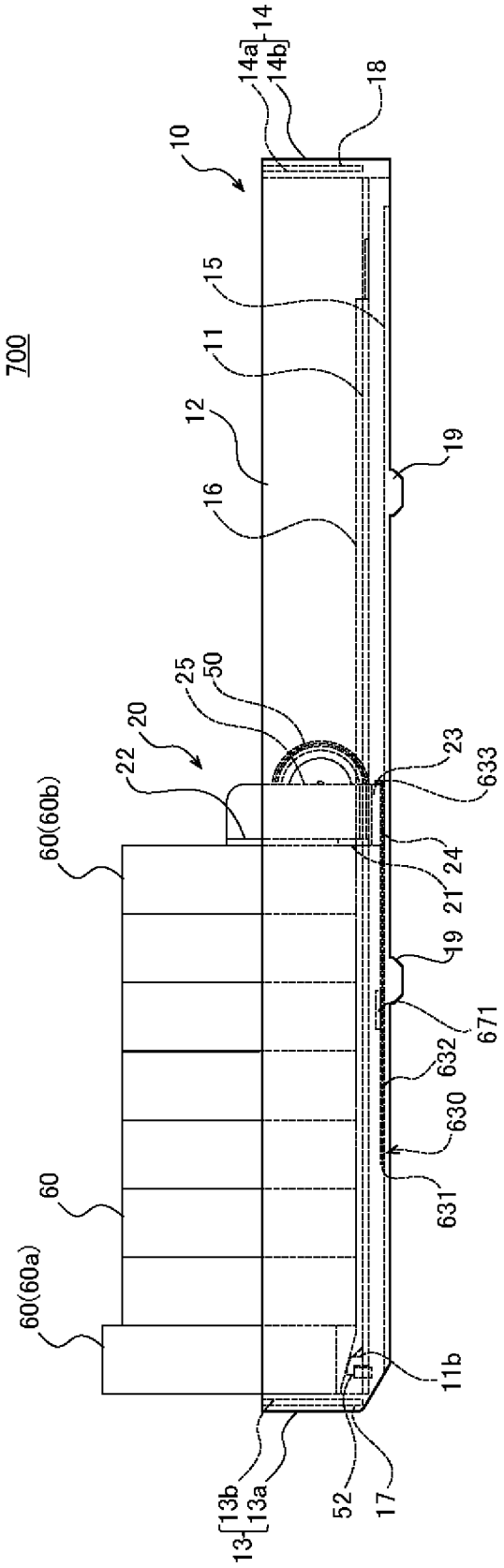
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FIG. 31

[Fig. 32]

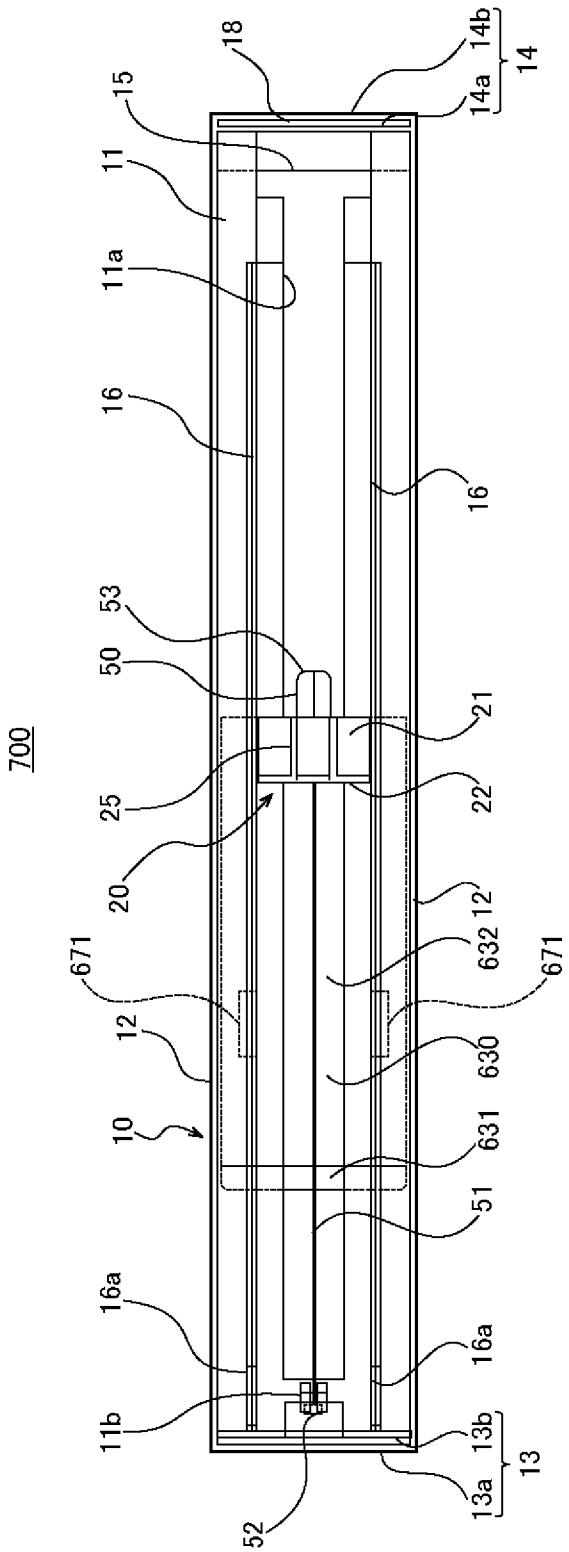
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FIG. 32

[Fig. 33]

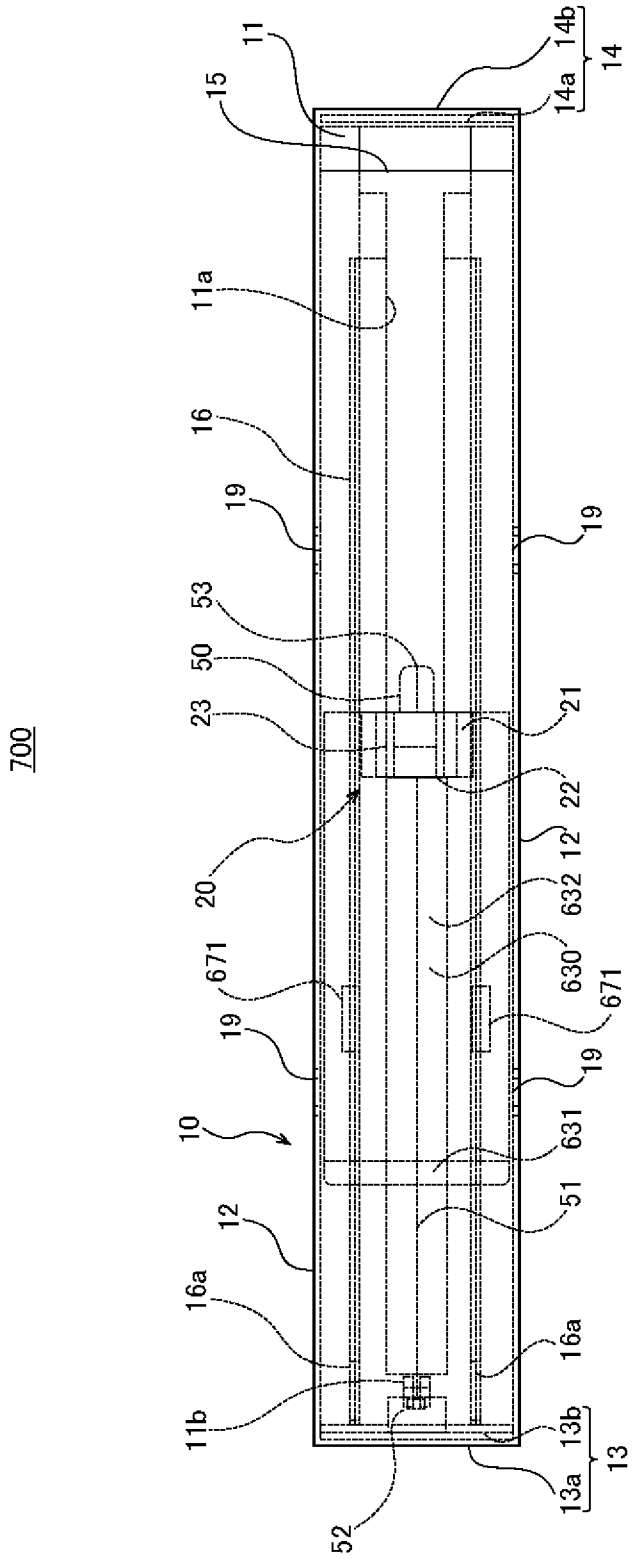
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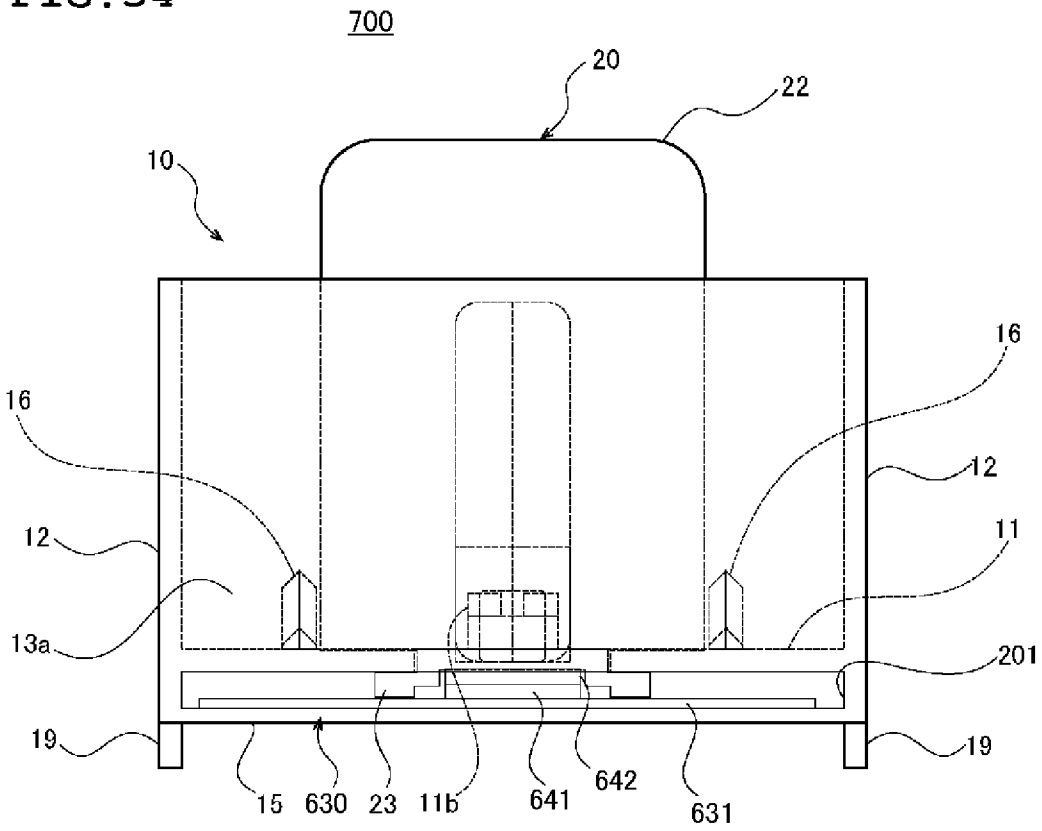
FIG. 33

[Fig. 34]

FIG.34



[Fig. 35]

FIG. 35A

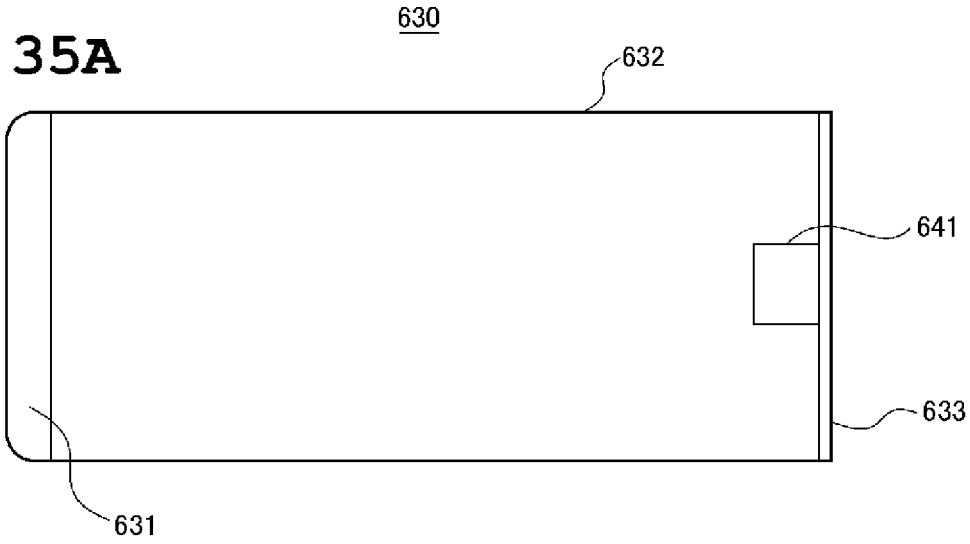
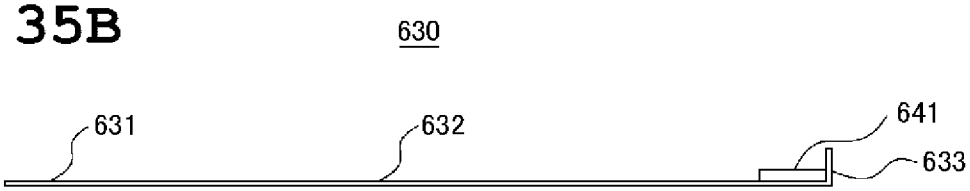


FIG. 35B



INTERNATIONAL SEARCH REPORT

International application No
PCT/JP2012/001884

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47F1/12
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 992 652 A (SPRINGS KEITH A [US]) 30 November 1999 (1999-11-30) the whole document -----	1-30
X	WO 03/039301 A1 (WANZL METALLWARENFABRIK KG [DE]) 15 May 2003 (2003-05-15) the whole document -----	1-30
A	WO 99/08950 A1 (ADVERTISING DISPLAY COMPANY [US]) 25 February 1999 (1999-02-25) the whole document -----	1-30

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 June 2012	26/06/2012

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Cardan, Cosmin

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/JP2012/001884

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5992652 A	30-11-1999	NONE	
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