United States Patent Application Publication	20250263880
Kind Code	A1
Publication Date	August 21, 2025
Inventor(s)	KIM; Younghoon et al.

LAUNDRY TREATING APPARATUS

Abstract

A laundry treating apparatus includes a mounting portion disposed on a top cover and disposed at the rear of a door or an inlet to deliver detergent to a tub, a storage detachably disposed on the mounting portion to store the detergent therein, and a fixing portion at least partially accommodated inside the storage to be inserted into and withdrawn from the storage. The fixing portion is selectively inserted into the mounting portion to fix the storage to the mounting portion.

Inventors: **KIM; Younghoon (Seoul, KR), JUNG; Sungwoon (Seoul, KR), KIM; Kunwoo (Seoul, KR)**

Applicant: **LG ELECTRONICS INC.** (Seoul, KR)

Family ID: **1000008588383**

Assignee: **LG ELECTRONICS INC. (Seoul, KR)**

Appl. No.: **18/708500**

Filed (or PCT Filed): **December 13, 2022**

PCT No.: **PCT/KR2022/020202**

Foreign Application Priority Data

KR	10-2022-0150883	Nov. 11, 2022

Publication Classification

Int. Cl.: **D06F39/02** (20060101); **D06F21/08** (20060101)

U.S. Cl.:

CPC **D06F39/02** (20130101); **D06F21/08** (20130101);

Background/Summary

CROSS REFERENCE TO RELATED APPLICATIONS [0001] This application is the National Phase of PCT International Application No. PCT/KR2022/020202, filed on Dec. 13, 2022, which claims priority under 35 U.S.C. 119 (a) to Patent Application No. 10-2022-0150883, filed in the Republic of Korea on Nov. 11, 2022, all of which are hereby expressly incorporated by reference into the present application.

TECHNICAL FIELD
[0002] The present disclosure relates to a laundry treating apparatus.
BACKGROUND
[0003] Generally, a laundry treating apparatus is a home appliance that removes foreign substances from laundry using water and detergent, and includes a tub that stores water therein, a water supply that supplies water to the tub, and a detergent supply that is disposed on a flow channel that connects the water supply with the tub and supplies detergent to the tub along with water.
[0004] In the existing laundry treating apparatus, the detergent supply was able to be simply formed as a space for storing the detergent, and a scheme in which a user injects the necessary detergent into the detergent supply whenever performing washing of the laundry was applied.
[0005] Although such existing laundry treating apparatus was able to guarantee the user autonomy to select a type and an amount of detergent needed, there was a fundamental problem in that it was difficult to expect injection of a necessary appropriate amount of detergent.
[0006] In addition, in such laundry treating apparatus, there was inconvenience of having to newly inject the detergent every time the washing is performed because all the detergent stored in the detergent supply is put into the tub when water is supplied to the detergent supply.
[0007] To overcome such problem, a laundry treating apparatus in which the detergent supply is controlled by a controller disposed on the laundry treating apparatus to supply the appropriate amount of detergent appeared (see Korean Patent Application Publication No. 2000-0009638).
[0008] The existing laundry treating apparatus was equipped with an automatic detergent supply apparatus including a storage in which the detergent supply stores the detergent, and a valve that automatically supplies the detergent contained in the storage to the tub.
[0009] Such laundry treating apparatus had an advantage that the controller is able to calculate an optimal amount of detergent based on an amount of the laundry, a water supply amount, and the like, and thus, only the appropriate amount of detergent is able to be supplied to the tub even when a great amount of detergent is stored in the storage.
[0010] However, the laundry treating apparatus had a limitation in that the storage is formed integrally with a cabinet or the like, and thus, is not able to be separated. As a result, when the foreign substances are introduced into the storage or the storage is contaminated, the laundry treating apparatus was not able to wash the storage, so that there was a possibility that the automatic detergent supply apparatus may be damaged or the laundry may be contaminated by the detergent stored in the storage.
[0011] In particular, the laundry treating apparatus had a fundamental limitation in that it is difficult to perform maintenance and repair because, when the user puts wrong detergent or the foreign substances into the storage, there is no way to easily remove the same.

[0012] To overcome such problem, a laundry treating apparatus in which the storage may be separated from the laundry treating apparatus appeared (Korean Patent Application Publication No. 10-2021-0027019).
[0013] The laundry treating apparatus was constructed such that the storage may be separated from the flow channel that supplies the detergent and be completely withdrawn to the outside. Therefore, when the storage is contaminated or the foreign substances are introduced thereinto, the storage may be easily cleaned, and when detergents other than detergent suitable for the storage or the foreign substances are introduced, the detergents or the foreign substances may be easily removed.
[0014] In one example, a great amount of detergent must be injected into the storage to reduce the number of times the user injects the detergent into the storage. Accordingly, the storage needed to increase in volume to accommodate an amount of detergent to perform multiple washing cycles.
[0015] The existing laundry treating apparatus was equipped with a drawer type housing that accommodates therein and supports an entirety of the storage so as to stably support the heavy and bulky storage.
[0016] The housing had all closed surfaces except for an open surface from which the storage is extended to support four or more surfaces of the storage. As a result, the existing laundry treating apparatus was able to stably support the storage even when great vibration occurs.
[0017] However, for the automatic detergent supply apparatus to be formed to completely accommodate the storage in the housing (hereinafter, referred to as the drawer type), it was common that the laundry treating apparatus is of a front load type in which an opening through which the laundry is introduced is defined at the front, like the existing laundry treating apparatus.
[0018] The front load type washing machine has a drum that accommodates the laundry therein and is constructed to rotate about a rotation axis parallel to or slightly inclined to the ground, and the tub accommodating the drum therein is also formed in a cylindrical shape oriented in a front and rear direction. Therefore, the existing front load type washing machine had an advantage that a space in which the drawer type automatic detergent supply apparatus may be installed may be secured at a front edge of the cabinet.
[0019] In particular, because the front load type washing machine does not have a door on a top surface, there was also an advantage that the separate automatic detergent supply apparatus may be installed at the top of the cabinet.
[0020] However, such drawer type automatic detergent supply apparatus had a problem of being difficult to be applied to a top load type washing machine in which a laundry inlet is defined at the top of the cabinet.
[0021] Nevertheless, recently, a laundry treating apparatus in which the drawer type automatic detergent supply apparatus is equipped in the top load type washing machine appeared (see Korea Patent Application Publication No. 10-2018-0080013).
[0022] In the laundry treating apparatus, the drawer type automatic detergent supply apparatus was applied to the top load type washing machine equipped with the opening through which the laundry is introduced defined at the top of the cabinet and the door that opens and closes the opening.
[0023] In the top load type washing machine, because a suspension supporting the tub or the like is fixed to a corner of the cabinet, it is difficult to install the automatic detergent supply apparatus inside the cabinet, or even when the automatic detergent supply apparatus is installed, it is difficult to expand a capacity of the storage or to install a water supply flow channel.
[0024] In addition, in the top load type washing machine, when the automatic detergent supply apparatus is disposed in front of the door or the opening, the automatic detergent supply apparatus disturbs putting the laundry into the opening or opening the door.
[0025] Therefore, in the existing laundry treating apparatus, the automatic detergent supply apparatus was disposed at the rear of the door or the opening and the automatic detergent supply apparatus was of the drawer type where the storage is extended forward.
[0026] However, installation of a pump that discharges the detergent stored in the storage or a

connection portion that connects the pump with the storage is essential in the automatic detergent supply apparatus. When the automatic detergent supply apparatus is of the drawer type, the pump or the connection portion must be installed on a surface opposite to a surface where the storage is retracted. As a result, the storage must be spaced forwardly apart from a rear surface of the laundry treating apparatus as much as a space where the pump or the connection portion should be installed.

[0027] That is, when the drawer type automatic detergent supply apparatus that is extended forward is installed in the top load type washing machine like the existing laundry treating apparatus, all of the storage and the pump/the connection portion must be installed in a space from a rear side of the cabinet to a rear surface of the inlet or the door. As a result, the existing laundry treating apparatus had a fundamental problem in that an area size of the opening or the door is reduced, making the introduction and withdrawal of the laundry inconvenient.

[0028] Moreover, the existing laundry treating apparatus has a problem in that it is difficult to sufficiently secure a thickness of the storage in the front and rear direction even when the area size of the opening or the door is reduced, and thus the volume of the storage is not able to be sufficiently expanded.

[0029] To solve such problem, a drawer type automatic detergent supply apparatus in which the storage is extended upward in the top load type washing machine may be considered. In this case, the pump/the connection portion will be disposed under the storage, so that the width of the storage in the front and rear direction is sufficiently secured and the area size of the opening is not reduced.

[0030] However, in the top load type washing machine, the automatic detergent supply apparatus must be disposed rearward of the opening, making it difficult for the user to access the automatic detergent supply apparatus. In such situation, when the storage is constructed to be extended upward, there is a problem that a physical condition of a regular user is not suitable for completely extending the storage to an upper end of the drawer.

[0031] To resolve such problem, a drawer type automatic detergent supply apparatus that has the storage extended laterally in the top load type washing machine may be considered.

[0032] In this regard, it may be easy to extend the storage laterally, but the extending direction of the storage must be maintained until the storage is completely extended from the drawer.

[0033] Therefore, when a wall is disposed or another home appliance is disposed on a side surface of the laundry treating apparatus and thus a length for the storage to be extended is not secured, retraction and extension of the storage becomes completely impossible.

[0034] As a result, in prior art, there was the fundamental limitation in installing the automatic detergent supply apparatus of the drawer type in the top load type washing machine.

[0035] In one example, it may be considered that the automatic detergent supply apparatus is coupled to the top load type washing machine in a slide scheme rather than the drawer type. In other words, a scheme in which the storage is mounted on a mounting portion disposed at the rear of the door or the opening on the cabinet in an exposed state may be considered.

[0036] In this case, there is an advantage that a retraction/extension direction of the storage is not limited by a shape or the like of the drawer and thus the storage is easily mounted on the mounting portion.

[0037] For example, a scheme of coupling the storage to the mounting portion disposed at the rear of the door on a top surface of the cabinet by inserting the storage downward may be considered. In this case, as a depth at which the storage is inserted downward increases, the storage may be stably fixed to the mounting portion, but it may become difficult to extend the storage from the mounting portion as much.

[0038] Therefore, a scheme in which the storage slides by a certain length inward from a side surface of the mounting portion and is coupled to the mounting portion may be considered. In this case, there is an advantage that the storage may be easily mounted on and removed from the mounting portion, but there is also a limitation that the storage may be arbitrarily separated from

the mounting portion when vibration or the like occurs.
[0039] As a result, in the top load type washing machine, the scheme in which the storage slides in a width direction of the cabinet in the state where the storage is exposed on the cabinet and is mounted on the mounting portion is the easiest and highly applicable for attachment and detachment of the storage.
[0040] However, the easier it is to install the storage on the mounting portion, the easier it is for the storage to be separated from the cabinet, so that research is needed to make mounting the storage easy and stably fixing the storage.

SUMMARY

Technical Problem

[0041] The present disclosure is to provide a laundry treating apparatus in which a storage that stores detergent therein is stably fixed outside a cabinet in a detachable manner in a state of being exposed to the outside in an automatic detergent supply apparatus of a top load type washing machine.
[0042] The present disclosure is to provide a laundry treating apparatus in which the storage in the top load type washing machine may be fixed and separated outside the cabinet in a scheme of sliding in a width direction, but may remain fixed despite vibration or the like.
[0043] The present disclosure is to provide a laundry treating apparatus in which the storage in the top load type washing machine may not be separated arbitrarily even when the storage is detachably coupled to the cabinet in the scheme of sliding in the width direction.
[0044] The present disclosure is to provide a laundry treating apparatus in which the storage in the top load type washing machine may be firmly coupled to the cabinet in the scheme of sliding in the width direction, but may be easily separated based on an intention of a user.

Technical Solutions

[0045] Provided is a laundry treating apparatus including a mounting portion disposed on a top cover and disposed at the rear of a door or an inlet to deliver detergent to a tub, a storage detachably disposed on the mounting portion to store the detergent therein, and a fixing portion at least partially accommodated inside the storage to be inserted into and withdrawn from the storage, wherein the fixing portion is selectively inserted into the mounting portion to fix the storage to the mounting portion.
[0046] In one implementation, the storage may be detachable from the mounting portion in a width direction of the top cover.
[0047] In one implementation, the mounting portion may include a mounting body disposed on the top cover and disposed at the rear of the door or the inlet, and a restricting surface disposed at an inner side or one end of the mounting body to support the storage.
[0048] In one implementation, the storage may include a storage body seated on the mounting portion to store the detergent therein, and a push portion disposed on the storage body and at least partially exposed to the outside of the storage body, and a pressed direction of the push portion and a moving direction of the fixing portion may be perpendicular to each other.
[0049] In one implementation, the push portion may be disposed on one surface of the storage body so as to be pressed in a front and rear direction of the top cover, and the fixing portion may be withdrawn from the mounting portion in a height direction when the push portion is pressed.
[0050] In one implementation, the fixing portion may include a fixing body coupled to the push portion, a locking hook disposed downwardly of the fixing body to be selectively inserted into the mounting portion, and an elastic portion disposed to connect the fixing body with the locking hook.
[0051] In one implementation, the locking hook may be disposed rearwardly of the fixing body.
[0052] In one implementation, the storage may further include a plate disposed under the storage body and seated on the mounting portion, a hook insertion hole defined in the plate, wherein the locking hook is inserted and withdrawn through the hook insertion hole, and guide ribs disposed on both sides of the hook insertion hole to guide the locking hook to move only in a height direction.

[0053] In one implementation, the fixing portion may further include a prevention rib disposed at both sides of the fixing body to guide the push portion or the fixing body to move only in a front and rear direction.
[0054] In one implementation, the locking hook may further include a movable surface slidable in a front and rear direction on the mounting portion.
[0055] In one implementation, the storage may include a discharge portion disposed at one side or an inner side of the storage body and in communication with and detachably coupled to the mounting portion, and the push portion may be disposed at the other side or an outer side of the storage body.
[0056] In one implementation, the mounting portion may further include an insertion groove defined as at least a portion of a top surface of the mounting portion facing the storage body is recessed, wherein the fixing portion is inserted into the insertion groove.
[0057] In one implementation, the mounting portion may further include a mounting groove supporting a lower portion of the storage body, a communication portion disposed at one side or an inner side of the mounting groove and detachably coupled to the storage body to receive the detergent, a bump protruding to the other side of the mounting groove to prevent the storage from deviating, and an outer support surface extending outwardly of the bump and supporting the storage, and the insertion groove may be defined at the other side or an outer side of the mounting groove.
[0058] In one implementation, the insertion groove may be defined in the outer support surface.
[0059] In one implementation, a recessed direction of the insertion groove may be perpendicular to the pressed direction of the push portion.

Advantageous Effects

[0060] According to the present disclosure, the storage that stores the detergent therein is stably fixed outside the cabinet in the detachable manner in the state of being exposed to the outside in the automatic detergent supply apparatus of the top load type washing machine.
[0061] According to the present disclosure, the storage in the top load type washing machine may be fixed and separated outside the cabinet in the scheme of sliding in the width direction, but may remain fixed despite the vibration or the like.
[0062] According to the present disclosure, the storage in the top load type washing machine may not be separated arbitrarily even when the storage is detachably coupled to the cabinet in the scheme of sliding in the width direction.
[0063] According to the present disclosure, the storage in the top load type washing machine may be firmly coupled to the cabinet in the scheme of sliding in the width direction, but may be easily separated based on the intention of the user.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0064] FIG. **1** shows a configuration of a laundry treating apparatus according to the present disclosure.
[0065] FIG. **2** shows an outer appearance of a laundry treating apparatus according to the present disclosure.
[0066] FIG. **3** shows a structure of a top cover of a laundry treating apparatus according to the present disclosure.
[0067] FIG. **4** shows an embodiment in which a storage of a laundry treating apparatus according to the present disclosure is detached from a mounting portion.
[0068] FIG. **5** shows a structure of a mounting portion of a laundry treating apparatus according to the present disclosure.

[0069] FIG. **6** shows a cross-sectional view of the mounting portion.
[0070] FIG. **7** shows a structure of a storage of a laundry treating apparatus according to the present disclosure.
[0071] FIG. **8** shows a width direction fixing structure of an automatic detergent supply apparatus in a laundry treating apparatus according to the present disclosure.
[0072] FIG. **9** shows a cross-sectional view of the storage mounted on the mounting portion.
[0073] FIG. **10** shows a structure in which the storage is fixed to the mounting portion in a front and rear direction.
[0074] FIG. **11** shows an exploded perspective view of the storage body of the storage.
[0075] FIG. **12** shows an exploded perspective view of the plate of the storage.
[0076] FIG. **13** shows a structure in which the fixing portion is installed in the storage.
[0077] FIG. **14** shows a detailed structural embodiment of the fixing portion.
[0078] FIG. **15** shows an operating scheme of the fixing portion.
[0079] FIG. **16** shows a process in which the storage is separated from the mounting portion.

BEST MODE

[0080] Hereinafter, embodiments disclosed herein will be described in detail with reference to the attached drawings. As used herein, identical and similar components will be assigned with identical and similar reference numbers, and the description thereof will be replaced with the first description. As used herein, a singular expression includes a plural expression unless the context clearly dictates otherwise. Additionally, in describing the embodiment disclosed herein, when it is determined that a detailed description of related known technology may obscure the gist of the embodiment disclosed herein, the detailed description will be omitted. In addition, it should be noted that the attached drawings are only intended to facilitate understanding of the embodiments disclosed herein, and should not be construed as limiting the technical idea disclosed herein by the attached drawings.
[0081] FIG. **1** shows a configuration of a laundry treating apparatus according to the present disclosure.
[0082] A laundry treating apparatus **1** according to the present disclosure may perform a washing course to remove foreign substances from laundry with water and detergent.
[0083] The laundry treating apparatus according to the present disclosure may include a cabinet **10** that forms an outer appearance of the apparatus, a tub **50** disposed inside the cabinet **10** to store water therein, a drum **60** rotatably disposed inside the tub **50** to accommodate the laundry therein, and a driver **90** coupled to the tub **50** to rotate the drum **60**.
[0084] The cabinet **10** may have an opening defined therein through which the laundry is introduced at the top, and each of the tub **50** and the drum **60** may have an inlet through which the laundry is introduced at the top.
[0085] Additionally, the driver **90** may be fixed to a bottom surface of the tub **50** and rotate the drum **60**.
[0086] The laundry treating apparatus according to the present disclosure may further include a suspension that supports the tub **50** inside the cabinet **10**, and the suspension may be composed of a damper, a spring, and the like that connect a lower portion of the tub **50** with an upper inner portion of the cabinet **10**.
[0087] The laundry treating apparatus according to the present disclosure may include a water supply **70** that is disposed at a rear portion of the cabinet **10** and supplies water to the tub **50** by being in communication with an external water supply source, and a drainage **80** that discharges water contained in the tub **50** to the outside of the cabinet **10** by being in communication with a lower portion of the tub **50**.
[0088] The laundry treating apparatus according to the present disclosure may include one or more of a manual detergent supply apparatus **100** and an automatic detergent supply apparatus **1000** that supply detergent to the tub **50**.

[0089] The manual detergent supply apparatus **100** may be constructed to allow a user to directly add the detergent.
[0090] The manual detergent supply apparatus **100** is constructed such that the water supply **70** and the tub **50** are in communication with each other, so that the introduced detergent is entirely supplied to the tub **50** as water supplied from the water supply **70** is received. As a result, the manual detergent supply apparatus **100** is constructed such that an appropriate amount of detergent is received directly from the user each time the course is performed.
[0091] The automatic detergent supply apparatus **1000** may be constructed to store a great amount of detergent to be supplied to the tub **50**. That is, the automatic detergent supply apparatus **1000** may be constructed such that an amount of detergent capable of performing the course a plurality of times is stored at once and the appropriate amount of detergent is discharged to the tub **50** each time the course is performed.
[0092] Unlike the manual detergent supply apparatus **100**, the automatic detergent supply apparatus **1000** may be constructed not to receive water from the water supply **70**. That is, because the automatic detergent supply apparatus **1000** does not receive water from the water supply **70**, even when the great amount of detergent is stored, the detergent may be prevented from being entirely discharged with water supplied to the water supply **70**.
[0093] A downstream portion of the automatic detergent supply apparatus **1000** may be in communication with the water supply **70** or the tub **50**, but an upstream portion thereof may not be in communication with the water supply **70**.
[0094] The laundry treating apparatus according to the present disclosure may include both the manual detergent supply apparatus **100** and the automatic detergent supply apparatus **1000** or may include only one of them.
[0095] When both the manual detergent supply apparatus **100** and the automatic detergent supply apparatus **1000** are disposed, the manual detergent supply apparatus **100** and the automatic detergent supply apparatus **1000** may be constructed such that respective downstream portions thereof are in communication with each other, thereby simplifying a flow channel structure.
[0096] FIG. **2** shows an embodiment of an outer appearance of a laundry treating apparatus according to the present disclosure.
[0097] The laundry treating apparatus **1** according to the present disclosure may include a top cover **20** coupled to an upper portion of the cabinet **10**. The top cover **20** may form a top surface of the laundry treating apparatus **1** and may have the opening through which the laundry is introduced.
[0098] A control panel **40** having an input unit that receives a command to perform the course, and a display that may externally display a state of the course being performed, a state of the automatic detergent supply apparatus **1000**, and the like may be installed on the top cover **20**.
[0099] The top cover **20** may be made of a material different from that of the cabinet **10**.
[0100] Accordingly, even when the cabinet **10** is made of a metal material to ensure durability, the top cover **20** may be made of a resin or the like to simply a complex structure or to facilitate coupling of another component.
[0101] For example, a door **30** that opens and closes the opening may be pivotably coupled to the top cover **20**.
[0102] The automatic detergent supply apparatus **1000** may store a greater amount of detergent as a volume thereof increases, thereby reducing the number of times the user fills the automatic detergent supply apparatus **1000** with the detergent.
[0103] In one example, the automatic detergent supply apparatus **1000** may be detachably installed in the laundry treating apparatus **1** according to the present disclosure. As a result, the automatic detergent supply apparatus **1000** may be easily cleaned by the user and may be easily replaced even when detergent that the user does not want or the foreign substances are introduced thereinto.
[0104] In one example, because the suspension is disposed at a corner of the cabinet **10** and the tub **50** is disposed adjacent to an inner upper end of the cabinet **10** in a height direction, there is not

enough space to install the automatic detergent supply apparatus **1000** inside the cabinet **10**.
[0105] Therefore, the automatic detergent supply apparatus **1000** may be disposed outside the cabinet **10** and expanded to have a sufficient volume without being restricted by an internal space of the cabinet **10**.
[0106] The automatic detergent supply apparatus **1000** may be coupled to the top cover **20** so as to be exposed to the outside. As a result, the automatic detergent supply apparatus **1000** may be easily separated from and installed on the top cover **20**.
[0107] In one example, when the automatic detergent supply apparatus **1000** is disposed in front of or at both side surfaces of the door **30** or the opening, the automatic detergent supply apparatus **1000** may disturb opening the door **30** or putting the laundry into the opening.
[0108] Accordingly, the automatic detergent supply apparatus **1000** may be disposed at the rear of the door **30** or the opening. As a result, the user may open the door **30** or put the laundry into the opening without being disturbed by the automatic detergent supply apparatus **1000**. Additionally, the automatic detergent supply apparatus **1000** may support the open door **30**, preventing excessive opening of the door **30** at the opening.
[0109] In one example, because the driver **90** is disposed under the tub **50**, when the laundry treating apparatus according to the present disclosure vibrates, the top cover **20** may vibrate the most. Because the automatic detergent supply apparatus **1000** may accommodate the great amount of detergent therein, a weight thereof is great and thus an inertial force thereof is also great. In such situation, when the automatic detergent supply apparatus **1000** is detachably coupled to top cover **20** from above, vibration with the greatest amplitude is transmitted to the automatic detergent supply apparatus **1000** among the components of the laundry treating apparatus, so that there may be a high possibility that the automatic detergent supply apparatus **1000** is randomly separated from the top cover **20**.
[0110] Therefore, the automatic detergent supply apparatus **1000** may be completely accommodated in a housing disposed in the top cover and may be of a drawer type extended to the outside from one surface of the housing.
[0111] However, when the automatic detergent supply apparatus **1000** is of the drawer type in a state coupled to a portion at the rear of the door **30** in the top cover **20**, a surface from which the automatic detergent supply apparatus **1000** is extended from the housing may correspond to one of a top surface, a side surface, and a front surface.
[0112] Because a top load type washing machine has a height greater than a width to secure washing capacity, it is very difficult for the user to completely extend and retract the automatic detergent supply apparatus from and into the housing of the top cover **20** in a vertical direction. Additionally, because the automatic detergent supply apparatus is disposed at the rear of the door **30**, it may be very difficult for the user to extend and retract the automatic detergent supply apparatus from and into the housing of the top cover **20** in the vertical direction.
[0113] In addition, it may be easier for the user to extend and retract the automatic detergent supply apparatus from and into the side surface of the housing of the top cover **20** than to extend and retract the automatic detergent supply apparatus in the vertical direction.
[0114] However, for the automatic detergent supply apparatus to be fully extended from the housing, a space for the extension is required from the side surface as much as a length of the automatic detergent supply apparatus. Therefore, when the space where the laundry treating apparatus is disposed is narrow and the length for the automatic detergent supply apparatus to be extended is not secured, there is a problem in which the user is not able to utilize the automatic detergent supply apparatus itself.
[0115] In addition, the configuration in which the automatic detergent supply apparatus is extended and retracted in a front and rear direction from and into the top cover **20** may always ensure the length for the automatic detergent supply apparatus to be extended.
[0116] However, for the automatic detergent supply apparatus to be coupled to the housing and be

in communication with the tub, a pump or a hose to be coupled to and be in communication with the automatic detergent supply apparatus is essential at a rear surface of the housing facing away the surface into which the automatic detergent supply apparatus is inserted.

[0117] Therefore, because the automatic detergent supply apparatus must be disposed forwardly of the pump or the hose, an additional space for installing the pump or the hose must be secured at the rear of the door **30** and the inlet. As a result, the volume of the automatic detergent supply apparatus may not be secured sufficiently. When a length in the retraction/extension direction is extended sufficiently to secure the volume of the automatic detergent supply apparatus, an area size of the opening becomes smaller and thus input and withdrawal of the laundry become difficult, or the opening and the door **30** are disposed excessively biased forward in the top cover **20** and thus the laundry is accumulated first only in a front portion of the drum **60** to cause an imbalance.

[0118] As a result, it is preferable in the top load type washing machine like the laundry treating apparatus according to the present disclosure that the automatic detergent supply apparatus **1000** is not of the drawer type.

[0119] Therefore, the automatic detergent supply apparatus **1000** of the laundry treating apparatus according to the present disclosure may be mounted on top of the top cover **20** and exposed to the outside.

[0120] As a result, in the automatic detergent supply apparatus **1000** of the laundry treating apparatus according to the present disclosure, a degree of freedom may be secured as the direction in which the automatic detergent supply apparatus **1000** is mounted to or separated from the top cover **20** is less restricted than in the drawer type, and one or more of the height, the width, and the length may be increased sufficiently.

[0121] However, because it is difficult for the laundry treating apparatus **1000** to be accommodated and supported, the laundry treating apparatus according to the present disclosure may have a component to firmly fix the same. This will be described later.

[0122] FIG. **3** shows a structure of a top cover of a laundry treating apparatus according to the present disclosure.

[0123] A detergent supply **1000** of the laundry treating apparatus according to the present disclosure may be installed on the top cover **20**.

[0124] The top cover **20** may be made of a plastic material and thus may be easily molded into a structure on which the detergent supply unit **1000** may be seated.

[0125] The water supply **70** may be installed on a rear surface of the top cover **20**. The manual detergent supply apparatus **100** may be disposed at a rear lower portion of an opening **21** that extends through the top cover **20**.

[0126] The manual detergent supply apparatus **100** may be constructed to be extendable forward from the top cover **20** and may receive powder detergent or liquid detergent. The manual detergent supply apparatus **100** may be in communication with the water supply **70** to receive water and discharge the introduced detergent downward.

[0127] Because the inlet of the tub **50** is defined under the opening **21**, the detergent discharged from the manual detergent supply apparatus **100** may be delivered into the tub **50** as it is.

[0128] The manual detergent supply apparatus **100** may have a drawer **101** that is extended and retracted in the front and rear direction in the opening **21**. As a result, the drawer **101** may be extended forward only when the detergent is added and may be accommodated in the top cover **20** at other times so as not to disturb the input of the laundry.

[0129] The automatic detergent supply apparatus **1000** may be disposed at a rear upper portion of the top cover **20**. The automatic detergent supply apparatus **1000** may be disposed upwardly of the water supply **70** and may be disposed upwardly of the manual detergent supply apparatus **100**.

[0130] Accordingly, the detergent discharged from the automatic detergent supply apparatus **1000** may be delivered to the water supply **70** or the manual detergent supply apparatus **100** and supplied to the tub **50**.

[0131] The automatic detergent supply apparatus **1000** may include a storage **200** that stores the detergent supplied to the tub **50** therein, and a mounting portion **300** that fixes the storage **200** to the top of the top cover **20**.
[0132] The storage **200** may be detachably disposed on the mounting portion **300**. Accordingly, the storage **200** may be separated from the mounting portion **300** whenever necessary, making cleaning/maintenance easy.
[0133] Additionally, when the user supplies the detergent to the storage **200**, the storage **200** may be removed from the mounting portion **300**. As a result, the user may insert the detergent into the storage **200** without being restricted by location, and the top cover **20** and the like may be prevented from being contaminated during the process of inserting the detergent into the storage **200**.
[0134] The storage **200** may include a plurality of storages to store different detergents therein. The plurality of storages **200** may be mounted on the mounting portion **300** along a width direction of the top cover **20**.
[0135] The mounting portion **300** may be disposed in the width direction at a rear portion of the top cover **20**. The mounting portion **300** may be formed integrally with the top cover **20** or may be mounted on the top cover **20** at the rear of the door **30**.
[0136] The mounting portion **300** may be constructed such that the storage **200** is mounted thereon, and the storage **200** may be constructed such that a lower portion thereof is fixed to the mounting portion **300**.
[0137] The storage **200** may be coupled to and separated from the mounting portion **300** in the state exposed to the outside of the top cover **20**. As a result, a direction in which the storage **200** is coupled to or separated from the mounting portion **300** is not limited to a specific direction, so that the user may couple and separate the storage **200** to and from the mounting portion **300** without being greatly limited by the height of the cabinet **10**.
[0138] An overall length of the storage **200** may be greater than a height or a thickness of the storage **200**. As a result, while increasing a detergent storage capacity of the storage **200**, a center of gravity of the storage **200** may be lowered and an area size of the door **30** or the opening **21** may be guaranteed.
[0139] A transfer portion that receives the detergent from the storage **200** and discharges the detergent into the tub **50** may be installed in the mounting portion **300**. The transfer portion may include a detergent pump that discharges the detergent from the storage **200**, and a detergent supply pipe that allows the detergent pump to be in communication with one or more of the water supply **70**, the tub **50**, and the manual detergent supply apparatus **100**.
[0140] FIG. **4** shows an embodiment in which a storage is detached from a mounting portion.
[0141] Referring to (a) in FIG. **4**, the storage **200** may include a first storage **200***a* that stores first detergent therein and is detachably coupled to the mounting portion **300**, and a second storage **200***b* that is disposed separately from the first storage **200***a*, stores second detergent therein, and is detachably coupled to the mounting portion **300**.
[0142] The first detergent may be laundry detergent necessary to remove the foreign substances from the laundry and the second detergent may be a bleach that bleaches the laundry, a softener that adjusts hardness and scent of fiber, or the like.
[0143] The first detergent and the second detergent may be in a liquid form and may be easily discharged into the mounting portion **300** by own weights thereof.
[0144] The manual detergent supply apparatus may store third detergent therein. The third detergent may be separate detergent different from the first detergent and the second detergent, or may be the same as the first detergent and the second detergent but in powder form.
[0145] In one example, the third detergent may be completely the same as one of the first detergent and the second detergent.
[0146] The first storage **200***a* and the second storage **200***b* may be formed in the same shape, may

be disposed to be symmetrical to each other based on respective surfaces thereof facing each other, or may be formed in completely different shapes.

[0147] However, the first storage **200***a* and the second storage **200***b* may be formed in a structure that performs the same function and may be detachable from the mounting portion **300** in the same manner.

[0148] Therefore, hereinafter, structures, a coupling scheme, and a fixing scheme of the storage **200** and the mounting portion **300** will be described based on the second storage **200***b*.

[0149] However, this is only to avoid redundant description, and the description may be applied to the first storage **200***a* in the same manner.

[0150] Referring to (b) in FIG. **4**, the storage **200** may include a storage body **210** that provides a space to store the detergent therein.

[0151] The storage body **210** may be coupled and separated by sliding in the width direction of the top cover **20** on the mounting portion **300**.

[0152] The storage body **210** does not need to be lifted from the mounting portion **300** when separated from the mounting portion **300** and does not need to be lifted upwardly of the mounting portion **300** when coupled to the mounting portion **300**. Therefore, even when the storage body **210** is mounted on the top of the top cover **20** and mounted at the rear portion of the top cover **20**, the user may easily attach and detach the storage body **210** to and from the mounting portion **300**.

[0153] Additionally, the storage body **210** may be attached to or detached from the mounting portion **300** by being pressed or pulled from a side surface of the mounting portion **300**. Accordingly, even in a state in which the door **30** has opened the opening **21**, the user may attach and detach the storage body **210** to and from the mounting portion **300** from the rear of the door **30** in a slide scheme without being restricted.

[0154] Referring to (c) in FIG. **4**, when the storage body **210** is removed by moving to the side surface of the mounting portion **300**, the storage body **210** may then freely move not only laterally, but also upwardly, forwardly, rearwardly, and the like of the mounting portion **300**.

[0155] In other words, even when an inner surface of the storage body **210** does not move to the outside of the mounting portion **300**, the storage body **210** may be completely separated from the mounting portion **300**. For example, when the storage body **210** and the mounting portion **300** in fluid communication with each other are separated from each other, the storage body **210** may be completely detachable from the mounting portion **300**. Accordingly, the storage body **210** may continue to move to the side surface of the mounting portion **300** in the state supported by the mounting portion **300**, and may be lifted in all directions except the downward direction from the mounting portion **300** and separated from the mounting portion **300**.

[0156] As a result, even when a wall, another home appliance, or the like is disposed on an outer surface of the top cover **20** or an outer surface of the mounting portion **300** and a space for the storage body **210** to slide is not secured as much as a length of the storage body **210**, the storage body **210** may be separated from the mounting portion **300**.

[0157] When the storage body **210** is coupled to the mounting portion **300**, the above-described method may be performed in a reverse order.

[0158] Referring to (d) in FIG. **4**, the mounting portion **300** may include a communication portion **390** from which the storage body **210** is detachable. The storage body **210** may be disposed to be detachable from the communication portion **390** and may discharge the stored detergent into the communication portion **390**.

[0159] The communication portion **390** may protrude from the mounting portion **300** in the width direction of the top cover **20**. As a result, the storage body **210** may move in the width direction of the top cover **20** and be coupled to the communication portion **390**.

[0160] The mounting portion **300** may be constructed such that the storage body **210** may move in the slide manner on top of the mounting portion **300** until the storage body **210** is completely separated from the mounting portion **300**.

[0161] However, the storage body **210** may slide on the mounting portion **300** only when coupled to the communication portion **390**. When the coupling of the storage body **210** and the communication portion **390** is released, the storage body **210** may be completely separated from the mounting portion **300** even when the storage body **210** does not slide.
[0162] As a result, the storage body **210** may be coupled to and separated from the mounting portion **300** by sliding in the width direction of the top cover **20** on top of the mounting portion **300**. However, the storage body **210** may be supported on top of the mounting portion **300** and slide only when being fluidly coupled to and separated from the mounting portion **300**. That is, in a state in which the fluid coupling of the storage body **210** and the mounting portion **300** is released, the storage body **210** may freely move on top of the mounting portion **300** without being restricted by a shape of the mounting portion **300**.
[0163] The mounting portion **300** may include a mounting groove **310** that receives and supports at least a portion of a lower portion of the storage body **210**.
[0164] A bottom surface of the storage body **210** may be supported on both side surfaces of the mounting groove **310** and guided to slide in the state of being accommodated in the mounting groove **310**.
[0165] A restricting surface **320** that limits an inward movement or insertion of the storage body **210** may be disposed at one end of or inside the mounting groove **310**.
[0166] The restricting surface **320** may support the storage body **210** and prevent the storage body **210** from vibrating inward.
[0167] The communication portion **390** may protrude outward from the restricting surface **320**. The communication portion **390** may be disposed closer to a lower portion of the restricting surface **320** than to an upper portion.
[0168] In one example, when the storage **200** is seated on the mounting portion **300**, it is necessary to prevent the storage **200** from being arbitrarily separated from the mounting portion **300**. That is, the fact that the storage **200** slides along the mounting groove **310** and is easily detached from the mounting portion **300** means that the storage **200** may be easily separated from the mounting portion **300**.
[0169] Because the laundry treating apparatus according to the present disclosure is constructed as the top load type washing machine, more vibration occurs in the mounting portion **300**. Accordingly, the mounting portion **300** may be easily coupled to the storage **200**, but separation and relative vibration may be difficult.
[0170] To this end, the mounting portion **300** may further include a bump **330** that prevents the storage body **210** from being withdrawn or sliding toward the outer surface when the storage body **210** is coupled to the communication portion **390** or is completely mounted on the mounting portion **300**.
[0171] The bump **330** may protrude from the other end or an outer side of the mounting groove **310**.
[0172] A detailed structure of the mounting portion **300** supporting and fixing the storage **200** will be described later.
[0173] FIG. **5** shows a structure of a mounting portion of a laundry treating apparatus according to the present disclosure.
[0174] The mounting portion **300** may include a mounting body **301** disposed on top of the top cover **20** in the width direction of the top cover **20** and supporting the storage **200**, and the mounting groove **310** that is recessed from the mounting body **301** to receive and support the lower portion of the storage **200**.
[0175] The mounting groove **310** may extend along the width direction in the mounting body **301** and guide the slide movement of the storage **200**, and may accommodate a portion of the lower portion of the storage **200** and support or fix the storage **200** in the front and rear direction.
[0176] The mounting portion **300** may include the restricting surface **320** that extends stepwise

upward from an inner side of the mounting groove **310** to prevent the storage **200** from moving further inward, and may include the communication portion **390** disposed on the restricting surface **320** and detachable from the storage **200**. At least a portion of the communication portion **390** may be inserted into the storage body **210** to receive the detergent contained in the storage **200**.
[0177] The communication portion **390** may protrude from the restricting surface **320** toward the other end or the outer side of the mounting groove **310**. The restricting surface **320** may support a portion of the inner surface or the bottom surface of the storage body **210** to prevent the storage **200** from vibrating toward the inner side of the restricting surface **320**.
[0178] The mounting portion **300** may include an accommodating rib **340** that is disposed at both sides based on the direction in which the storage **200** slides in the mounting groove **310**, front and rear sides based on the top cover **20** and support the storage **200**.
[0179] The accommodating rib **340** may extend from one end or the inner side of the mounting groove **310** toward the other end or the outer side, and may protrude upward from the mounting body **301** to accommodate at least a portion of the lower portion of the storage **200** therein.
[0180] The accommodating rib **340** may protrude upwardly of a bottom surface of the mounting groove **310** and may extend outward from an upper end of the restricting surface **320**.
[0181] The mounting portion **300** may include the bump **330** that protrudes from the outer side or the other end of the mounting groove **310** to prevent the storage **200** from being withdrawn. The accommodating rib **340** may extend from the restricting surface **320** to the bump **330**.
[0182] The accommodating rib **340** may support both sides of the storage **200** and may guide the storage **200** to slide to the inner side and the outer side of the mounting groove **310**.
[0183] The bump **330** may be disposed to face the restricting surface **320** and may prevent the storage **200** from vibrating outwardly of the bump **330**.
[0184] As a result, the mounting groove **310** may be defined by being recessed in the mounting body **301**, but the accommodating rib **340**, the bump **330**, and the restricting surface **320** may protrude from the mounting body **301** to define the mounting groove **310** therein.
[0185] The mounting groove **310** may completely accommodate the lower portion of the storage **200** therein to fix and support the storage **200**, and may accommodate some surfaces of the lower portion of the storage **200** to fix and support the storage **200**.
[0186] A fastening portion **334** that detachably fixes the storage **200** may be disposed on an outer surface of the bump **330**. The fastening portion **334** may be defined as a groove recessed from the outer surface of the bump **330** and may be detachably coupled to a hook disposed on the storage **200**.
[0187] The mounting portion **300** may fix the lower portion of the storage when the storage is mounted in the mounting groove **310**.
[0188] When the storage **200** is coupled to the communication portion **390**, the restricting surface **320** and the bump **330** may fix the storage **200** to prevent the storage **200** from vibrating or moving further in the width direction.
[0189] When the storage **200** is coupled to the communication portion **390**, the accommodating rib **340** may fix the storage **200** to prevent the storage **200** from vibrating or moving in the front and rear direction.
[0190] The mounting portion **300** may accommodate or support four surfaces of the lower portion of the storage **200** to prevent the storage **200** from being arbitrarily separated from the mounting portion **300**.
[0191] When the storage **200** is coupled to the communication portion **390**, the fastening portion **334** defined in the bump **330** may be detachably coupled to the storage **200** to additionally fix the storage **200**.
[0192] In one example, the mounting portion **300** may additionally support the lower portion of the storage **200** via a side step **350** disposed outside the accommodating rib **340**, an inner support surface **380** disposed inwardly of the restricting surface **320**, and an outer step **360** and an outer

support surface **370** disposed outwardly of the bump **330**.
[0193] As a result, when the storage **200** is seated, the mounting portion **300** may fix the storage **200** to prevent the storage **200** from being separated arbitrarily, and prevent the storage **200** from vibrating in a direction of one of the four surfaces.
[0194] FIG. **6** shows a cross-sectional view of the mounting portion.
[0195] In addition to the detachable coupling and support structures, the mounting portion **300** may be formed in a shape to easily mount the storage **200** thereon while preventing the withdrawal of the storage **200**.
[0196] A depth H**1** of the mounting groove **310** in a portion adjacent to the communication portion **390** may be greater than a depth H**2** of the mounting groove **310** in a portion adjacent to the bump **330**.
[0197] Additionally, the mounting portion **300** may be constructed such that the mounting groove **310** is inclined in the width direction of the top cover.
[0198] The mounting groove **310** may have an inclination that decreases in a vertical level from the bump **330** toward the restricting surface **320**. The mounting groove **310** may be defined such that the vertical level thereof decreases from the other end or the outer side to the one end or the inner side, so that the storage **200** seated in the mounting groove **310** may be induced to slide toward the communication portion **390** by gravity.
[0199] Additionally, when the storage **200** is seated in the mounting groove **310**, the gravity may act in the direction toward the communication portion **390**, thereby preventing the storage **200** from sliding in the mounting groove **310** in an opposite direction.
[0200] The lower portion of the storage **200** may have an inclination corresponding to the inclination of the mounting groove **310**, so that the center of gravity may be further biased toward the restricting surface **320**.
[0201] As a result, even when the vibration in the width direction occurs in the storage **200**, the restricting surface **320** or the communication portion **390** may support a load of the storage **200** and prevent the storage **200** from deviating to the outside of the mounting groove **310**.
[0202] In addition, the bump **330** may have an inner surface **331** that supports a lower outer surface of the storage **200**, so that the storage **200** may be prevented from deviating to the outside of the bump **330**.
[0203] In addition, the bump **330** may have the fastening portion **334** in an outer surface **333** to fix the storage **200**, thereby preventing the storage **200** from deviating to the outside.
[0204] An exposed surface **332** extending the inner surface and the outer surface of the bump **330** may be disposed parallel to an upper end of the restricting surface **320**. The exposed surface **332** may support the lower portion of the storage **200**.
[0205] FIG. **7** shows a structure of a storage of a laundry treating apparatus according to the present disclosure.
[0206] The storage **200** may include the storage body **210** that receives and stores the detergent therein, and a plate **220** that is disposed at the bottom of the storage body **210** and is able to be mounted on the mounting groove **310**.
[0207] The plate **220** may form the lower portion of the storage body **200**, and the plate **220** may be formed integrally with the storage body **210** or may be coupled to the lower portion of the storage body **210**.
[0208] The plate **220** may be detachable from the mounting portion **300** and may be fixed to the mounting portion **300**. The storage body **210** may be stably fixed to the mounting portion **300** by the plate **220**.
[0209] The plate **220** may include a discharge portion **230** that is detachably coupled to the communication portion **390** and discharges the detergent at one side or at the bottom.
[0210] The discharge portion **230** may be disposed closer to one end or an inner side of the plate **220** than to the other end or an outer side.

[0211] A check valve that discharges the detergent of the storage body **210** only when being coupled with the communication portion **390** may be installed on the discharge portion **230**.
[0212] The plate **220** may include a bottom surface **222** that forms a bottom surface of the storage body **210** and allows the detergent to flow to the discharge portion **230**.
[0213] The bottom surface **222** may have an inclination that decreases in vertical level from the other end or the outer side of the storage body **210** to the one end or the inner side. That is, the bottom surface **222** may have the inclination that decreases in the vertical level toward the discharge portion **230** to induce the detergent of the storage body **210** to be discharged into the discharge portion **230** and also prevent the detergent from remaining inside the storage body **210**.
[0214] The storage body **210** and the plate **220** may all be accommodated and supported in the mounting groove **310**.
[0215] However, when the entire storage **200** is accommodated in the mounting groove **310**, it is easy to support and fix the storage **200** in the mounting groove **310**, but it may be too difficult to withdraw the storage **200**.
[0216] Accordingly, only a portion of the storage **200** may be accommodated in the mounting groove **310** and the remaining portion may be disposed outside the mounting groove **310** to facilitate the separation of the storage **200** from the mounting portion **300**.
[0217] To this end, the plate **220** and the storage body **210** may have a length greater than a length in the width direction of the mounting groove **310**, so that respective portions thereof may be disposed outside the mounting groove **310**.
[0218] The plate **220** may include a coupling surface **223** extending from the bottom surface **222** to the other end or the outer side. The coupling surface **223** may be disposed outside the mounting groove **310** and may be supported on an outer surface of the bump **330**.
[0219] In the storage **200**, the discharge portion **230** is supported by the communication portion **390**, and the coupling surface **223** is supported by the bump **330**, so that the storage **200** may be prevented from further moving to the inner side of the mounting groove **310** and vibrating.
[0220] In one example, a fixing portion **400** may be further included such that the storage **200** is supported on the outer support surface **370** when the storage **200** is mounted on the mounting portion **300**.
[0221] The fixing portion **400** may protrude downward from the coupling surface **223** and be supported in a hook insertion groove **371** defined in the outer support surface **370**. The hook insertion groove **371** may be defined as a portion of the outer support surface **370** is recessed.
[0222] The coupling surface **223** may include a hook insertion hole **224** defined by perforating a portion of the coupling surface **223**. The fixing portion **400** may pass through the hook insertion hole **224** and be inserted into the hook insertion groove **371**.
[0223] As a result, the fixing portion **400** of the storage **200** may be fixed to the mounting portion **300**, thereby preventing the storage **200** from being separated from the mounting portion **300**.
[0224] Additionally, the plate **220** may further include one or more of a support protrusion **227** supported inside the restricting surface **320** and a coupling portion **250** that is disposed on the coupling surface **223** and is detachably fixed to the fastening portion **334** disposed on the outer surface **333** of the bump **330**.
[0225] The support protrusion **227** may protrude from the plate **220** at a length to prevent the discharge portion **230** from being in contact with the bottom surface of the mounting groove **310**.
[0226] Additionally, the support protrusion **227** may be supported on an inner surface of the restricting surface **320**.
[0227] The coupling portion **250** may be formed in a shape of a hook that is detachably coupled to the fastening portion **334** defined in the bump **330**.
[0228] As a result, the support protrusion **227** may prevent the storage **200** from excessively moving into the mounting groove **310** or vibrating. In addition, the coupling portion **250** may prevent the storage **200** from moving inward in the mounting groove **310** or vibrating and may

prevent the storage **200** from moving outward of the mounting groove **310** or vibrating at a certain level via a force of coupling with the fastening portion **334**.

[0229] As a result, the storage **200** may further expand a volume of the storage body **210** by enlarging the storage body **210** to have a length greater than that of the mounting groove **310**, and at the same time, a portion of the lower portion of the storage body **210** may be stably accommodated in, supported by, and fixed to the mounting groove **310** via the plate **220**. In other words, the storage **200** may be supported on the inner support surface **380** disposed inwardly of the mounting groove **310**, and may extend further outward than the mounting groove **310** to further increase the detergent storage capacity. Additionally, the storage **200** may be stably seated in and fixed to the mounting groove **310** via the component that protrudes downward from the plate **220**.

[0230] In one example, the storage **200** may further include a support rib **240** that extends downward from both side surfaces based on the slide movement direction of the storage body **210** and shields a portion of the plate **220**.

[0231] The support rib **240** may be supported by an outer surface of the accommodating rib **340**, which will be described later, and may accommodate the mounting groove **310** and the entire accommodating rib **340**.

[0232] The support rib **240** may fix the storage **200** in the front and rear direction of the top cover **20** and prevent the storage **200** from vibrating or moving in the front and rear direction of the top cover **20**.

[0233] FIG. **8** shows a width direction fixing structure of an automatic detergent supply apparatus in a laundry treating apparatus according to the present disclosure (**370** and **371** added).

[0234] When the storage **200** is seated on the mounting portion **300**, the support protrusion **227** or an inner surface of the storage **200** may be supported on the restricting surface **320**.

[0235] Alternatively, the support protrusion **227** of the storage **200** may be supported on the restricting surface **320**, and the discharge portion **230** may be supported on the communication portion **390**.

[0236] Additionally, when the storage **200** is seated on the mounting portion **300**, at least a portion of the fixing portion **400** may be inserted into the hook insertion groove **371**.

[0237] In the storage **200**, the support protrusion **227** or the discharge portion **230** may be supported on the restricting surface **320** or in the communication portion **390**, and the fixing portion **400** may be supported on the outside of the bump **330**.

[0238] As a result, a state of the storage **200** may become a state in which the lower portion thereof is forcibly fitted by the restricting surface **320** and the bump **330**, and may be fixed in the width direction in the mounting groove **310**.

[0239] Therefore, the laundry treating apparatus according to the present disclosure may stably fix the storage **200** in the width direction even without the housing for accommodating the storage **200** therein.

[0240] In one example, the fixing portion **400** may protrude from the storage **200**, but may be attached to and detached from the storage **200**. The fixing portion **400** may be attached to and detached from the storage **200** via the hook insertion hole **224**.

[0241] The fixing portion **400** may be inserted into the storage **200**. Accordingly, the fixing portion **400** may be selectively fixed inside the hook insertion groove **371**.

[0242] The storage **200** may further include a push portion **260** that presses the fixing portion **400** and raises the fixing portion **400** to separate the same from the outer support surface **370**.

[0243] The push portion **260** may be exposed to the outside of the storage **200** to be pressed inward, and may selectively ascend and descend the fixing portion **400**.

[0244] Accordingly, the user may separate the storage **200** from the outer support surface **370** by pressing the push portion **260**. As a result, even when the storage **200** is securely fixed to the mounting portion **300** in the width direction, the storage **200** may be easily separated from the mounting portion **300** when the push portion **260** is pressed.

[0245] FIG. **9** shows a cross-sectional view of the storage mounted on the mounting portion.
[0246] The storage body **210** may include an accommodating body **211** that accommodates the detergent therein, and an installation portion **212** that installs the fixing portion **400**.
[0247] Because the fixing portion **400** is constructed to be able to reciprocate in the storage body **210**, the fixing portion **400** needs to be separated from the detergent accommodated in the storage body **210**.
[0248] To this end, the storage body **210** may have the installation portion **212** that provides a space where the fixing portion **400** is installed. The accommodating body **211** may be disposed inside the installation portion **212**, and a partition plate **225** may be disposed in a height direction between the accommodating body **211** and the installation portion **212**.
[0249] The partition plate **225** may be disposed inside the storage body **210** to partition the installation portion **212** and the accommodating body **211** from each other.
[0250] Not only the fixing portion **400**, but also the coupling portion **250** coupled to the bump **330** may be installed in the installation portion **212**.
[0251] The plate **220** may form a bottom surface of the accommodating body **211** and may be formed as an inclined surface to discharge the detergent into the discharge portion **230**.
[0252] That is, the plate **220** may have an inclination with a distance from a top surface of the storage body **210** increasing in a direction toward the discharge portion **230**. A bottom surface of the plate **220** may have an inclination corresponding to an inclination of the mounting groove **310**.
[0253] As a result, the storage **200** may be constructed such that a height thereof increases from an outer side or the installation portion **212** toward the discharge portion **230**.
[0254] The communication portion **390** may be detachably coupled to the discharge portion **230**.
[0255] In one example, the accommodating body **211** may extend further rearward than the discharge portion **230** and be supported on the inner support surface **380**. Accordingly, the accommodating body **211** may be constructed such that most of the accommodating body **211** except for the portion of the lower portion is exposed to the outside of the mounting groove **310**. As a result, the storage **200** may secure the detergent storage capacity without being limited by a volume of the mounting groove **310**.
[0256] Additionally, the installation portion **212** may be disposed to extend beyond the bump **330** and extend further outward than the outer surface of the bump **330**.
[0257] Accordingly, the storage **200** may have the coupling portion **250** not only on an inner surface of the bump **330** but also on the outside of the bump **330**. The storage **200** may support both the inner and outer surfaces of the bump **330** and be fixed to the mounting portion **300**.
[0258] FIG. **10** shows a structure in which the storage is fixed to the mounting portion in a front and rear direction.
[0259] Referring to (a) in FIG. **10**, the mounting portion **300** may have the accommodating rib **340** protruding in the front and rear direction of the mounting groove **310**, thereby preventing the storage **200** from vibrating or deviating forward or rearward.
[0260] The accommodating rib **340** may accommodate the bottom surface of the plate **220** therein.
[0261] The mounting portion **300** may further include the side step **350** disposed between an outer side of the accommodating rib **340** and the mounting body **301**. The side step **350** may extend from the mounting body **301** along an extension direction of the accommodating rib **340**.
[0262] The side step **350** may serve as a rail on which the storage **200** is supported and slides.
[0263] In other words, the storage **200** may be guided to slide while seated on the side step **350**.
[0264] The storage **200** may have the bottom surface of the plate **220** or the like accommodated and supported inside the accommodating rib **340**, and at the same time, supported on the side step **350** to support the outer surface of the accommodating rib **340**.
[0265] That is, the storage **200** may be formed in a shape in which the bottom surface thereof supports both the inner and outer surfaces of the accommodating rib **340** and grips both surfaces of the accommodating rib **340**. As a result, the storage **200** is fixed in the front and rear direction on

the top cover **20**, thereby preventing the storage **200** from moving or vibrating forward and rearward.

[0266] In one example, the mounting groove **310** may be defined to have a greater depth at a side facing the rear surface than at a side facing the opening **21**. That is, the mounting groove **310** may have a depth L**1** at a side adjacent to a portion of the accommodating rib **340** located at the rear surface greater than a depth L**2** at a side adjacent to a portion of the accommodating rib **340** located at the front surface.

[0267] The mounting groove **310** may have the inclination that becomes deeper rearwards. Accordingly, even when the detergent stored in the storage **200** leaves the mounting groove **310** because of severe vibration, the detergent may be prevented from falling into the opening **21**.

[0268] In addition, because the rear surface of the mounting groove **310** will correspond to a wall surface where a water pipe and the like are typically disposed, the storage **200** may be induced to be seated in the mounting groove **310** again by the wall surface.

[0269] Referring to (b) in FIG. **10**, the storage **200** may have the support rib **240** protruding downward from both side surfaces of the storage body **210** supported on the outer surface of the accommodating rib **340**.

[0270] The support rib **240** may extend downwardly of the plate **220**.

[0271] The support rib **240** may accommodate both surfaces of the accommodating rib **340** and be supported on the outer surface of the accommodating rib **240**.

[0272] Accordingly, the storage **200** may be firmly fixed in the front and rear direction because the plate **220** is accommodated in the mounting groove **310** and the support rib **240** accommodates the accommodating rib **340**. The storage **200** may be blocked from vibrating in the front and rear direction.

[0273] The support rib **240** may extend further downward from the discharge portion **230** in a direction toward the bump **330**. The support rib **240** may accommodate both surfaces of the bump **330** therein.

[0274] An inclination of a bottom surface of the support rib **240** may be formed opposite to the inclination of the mounting groove **310** and the inclination of the bottom surface of the plate **220**.

[0275] Correspondingly, the side step **350** may also be formed to have a height decreasing as it extends from the inner side to the outer side of the accommodating rib **340**.

[0276] Accordingly, when the support rib **240** is coupled from the outside to the inside, it is guided to engage accurately with the side step **350**, so that the storage **200** may be closely mounted on the mounting portion **300** while sliding.

[0277] Additionally, when the storage **200** moves to the outside of the mounting portion **300**, the support rib **240** may be induced to be easily separated from the side step **350**.

[0278] As a result, the storage **200** may be fixed in all four surface directions because of the support rib **240**, the fixing portion **400**, the coupling portion **250**, the support protrusion **227**, and the discharge portion **230**.

[0279] FIG. **11** shows an exploded perspective view of the storage body of the storage.

[0280] The storage body **210** may be formed longer in the width direction than in the front and rear direction and in the height direction, based on the top cover **20**.

[0281] An inner surface **2113** of the storage body **210** may be oriented in a vertical direction or a direction close to the vertical direction so as to be in close contact with another storage body **210** facing the same, and an outer surface **2114** may have an inclination to be upwardly convex in a direction from a top surface to a bottom surface, thereby preventing water from accumulating on a top surface **2111** and preventing the laundry from getting caught on the outer surface **2114** or the like of the storage body **210** and damaging.

[0282] The top surface **2111** of the storage body **210** may have an input hole **2117** into which the detergent may be input.

[0283] In the storage body **210**, the detergent may be input via the input hole **2117** and discharged

into the discharge portion **230** disposed at the bottom. As a result, the detergent may be prevented from remaining in the storage body **210**.
[0284] The top surface **2111** of the storage body **210** may have a door hinge **2116** to which a cover door **214** that opens and closes the input hole **2117** is pivotably coupled. The cover door **214** may be formed in a plate shape that may serve as the top surface of the storage body **210** when it covers the input hole **2117**, and may include a hinge coupling portion pivotably coupled to the door hinge **2116** at one end.
[0285] The input hole **2117** may be defined with a measurer that may measure an amount of detergent contained in the storage body **210** protruding inward.
[0286] Both side surfaces **2112** of the storage body **210**, as surfaces exposed at front and rear sides of the top cover **20**, may be constructed to be gripped by the user.
[0287] In one example, an outer surface **254** may be additionally coupled to the outer surface **2114** of the storage body **210**.
[0288] The outer surface **254** may serve to fix the above-described coupling portion **250** to the storage body **210**.
[0289] In one example, the plate **220** that forms the bottom surface of the storage body **210** to prevent the detergent from leaking out of the storage body **210** may be disposed under the storage body **210**.
[0290] A buffer member **270** that prevents friction with the mounting portion **300** and vibration impact may be coupled under the plate **220**, and the buffer member **270** may be coupled to each lower edge of the plate **220**.
[0291] The plate **220** may have the discharge portion **230** that may discharge an appropriate amount of detergent introduced into the storage body **210** to the outside. The discharge portion **230** may be formed in a shape of a check valve and may discharge the detergent to the outside only when coupled to the communication portion **390**, and may prevent the detergent or water from flowing back into the storage body **210**.
[0292] The storage body **210** may include the support rib **240** that protrude further from each corner. The support rib **240** may include a lower rib **241** that supports the outer surface of the accommodating rib **340** described above and fixes the storage body **210** in the front and rear direction, an inner surface rib **242** protruding from the inner surface **2113** of the storage body **210**, and an extension rib **243** disposed under the inner surface of the storage body **210** and extending the lower rib **241** on both sides.
[0293] The lower rib **241** may guide the storage body **210** to slide on the mounting portion **300** while also serving to fix the storage body **210** to the mounting portion **300**.
[0294] In addition, the inner surface rib **242** may serve to reinforce durability of the storage body **210** in preparation for collision with another adjacent storage body **210**.
[0295] Additionally, the extension rib **243** may serve to reinforce durability of the lower rib **241**.
[0296] The fixing portion **400** may include a fixing body **410** that is accommodated in the installation portion **212** and protrudes downwardly of the plate **220**, and a restoring portion **420** that pushes the fixing body **410** out of the plate **220**.
[0297] The push portion **260** that is disposed on one of both side surfaces **2112** of the storage body **210** to move or ascend and descend the fixing portion **400** may be installed.
[0298] The push portion **260** may move the fixing portion **400** by pressing one side of the fixing portion **400**.
[0299] When the push portion **260** is pressed, the fixing portion **400** may move inwardly of the storage body **210** and be spaced apart from the outer support surface **370**. An operating process of the fixing portion **400** will be described later.
[0300] FIG. **12** shows an exploded perspective view of the plate of the storage.
[0301] The plate **220** coupled to the lower portion of the storage body **210** may include a plate body **221** that forms the bottom surface of the storage body **210**, and the bottom surface **222** that is

disposed inside the plate body **221** and disposed inside the mounting groove **310**.
[0302] The bottom surface **222** may include a guide groove **2221** that is recessed in the plate body **221** to guide the detergent to the discharge portion **230**, and an installation groove **2222** that is further recessed in the guide groove **2221** to define a space in which the discharge portion **230** is installed.
[0303] The installation groove **2222** may have a discharge hole that extends through the installation groove **2222** toward the inner surface of the storage body **210** such that the discharge portion **230** is inserted and installed therein or that is coupled with the communication portion **390** to discharge the detergent. The discharge hole may be defined in a direction corresponding to the slide movement direction of the storage **200** in the plate **220**.
[0304] A sealing rib that is coupled with the inner surface, a partition surface, and a lower end of the side surface of the storage body **210** to prevent the leakage of the detergent may be formed on an outer peripheral surface of the guide groove **2221**.
[0305] The accommodating body **211** may be seated inside or at one side of the bottom surface. The bottom surface **222** may have a width or an area size corresponding to that of the mounting groove **310**, and at least a portion of the bottom surface **222** may be accommodated and seated within the accommodating rib **340**.
[0306] The coupling surface **223** may be disposed to extend from the outer side or the other side of the bottom surface **222**.
[0307] The coupling surface **223** may have an inclination such that a height thereof decreases in an outward direction from the bottom surface **222**, and may have the inclination opposite to that of the bottom surface **222**. Accordingly, the coupling surface **223** may be disposed such that an inner surface thereof faces the outer surface of the bump **330**.
[0308] The coupling portion **250** described above may be installed on the coupling surface **223**, and a detachable hook **2232** that detachably fixes the coupling portion **250** may be disposed.
[0309] The coupling surface **223** may be disposed outwardly of the accommodating body **211**.
[0310] The coupling surface **223** may include the hook insertion hole **224** through which the fixing portion **400** is inserted and withdrawn. The hook insertion hole **224** may be defined such that the fixing portion **400** extends through the plate **220** and reciprocates in the vertical direction.
[0311] The hook insertion hole **224** may be defined by perforating the portion of the coupling surface **223**.
[0312] The hook insertion hole **224** may further include guide ribs **2241** disposed on both sides of the hook insertion hole **224** to guide the fixing portion **400** to move only in the height direction. Accordingly, the fixing portion **400** may only ascend and descend in the height direction via the hook insertion hole **224** when the push portion **260** is pressed.
[0313] FIG. **13** shows a structure in which the fixing portion is installed in the storage.
[0314] The fixing portion **400** may be accommodated inside the storage body **210** and coupled to the push portion **260**.
[0315] The fixing portion **400** may include the fixing body **410** coupled to the push portion **260**, a locking hook **440** disposed downwardly of the fixing body **410** such that at least a portion thereof is selectively inserted into the mounting portion **300**, and an elastic portion **430** disposed to connect the body **410** with the locking hook **440**.
[0316] A connecting body **420** may be disposed under the fixing body **410**. As a result, the connecting body **420** may be supported and fixed outwardly of the bump **330**, and may guide the fixing portion **400** to move in the front and rear direction along an edge of the bump **330** when the push portion **260** is pressed forward.
[0317] The locking hook **440** may be disposed rearward of the fixing body **410**. That is, the locking hook **440** may be disposed close to the push portion **260**. Accordingly, when the push portion **260** is pressed forward, the fixing body **410** may also move forward and the elastic portion **430** may be compressed to guide the locking hook **440** to be withdrawn from the hook insertion groove **371**.

[0318] The elastic portion **430** may connect the connecting body **420** with the locking hook **440** to pull the locking hook **440** to the outside of the plate **220**.
[0319] The push portion **260** may be coupled to the side surface of the storage body **210** and pressurized. Additionally, the push portion **260** may be disposed at the other side or the outer side of the storage body **210**.
[0320] Because the storage **200** is attached to and detached from the mounting portion **300** in the width direction, it requires less force for the user to grip the outer side of the storage body **210** to separate the storage **200**.
[0321] A push installation portion **213** on which the push portion **260** may be installed may be disposed on the side surface of the storage body **210**. Likewise, the push installation portion **213** may be disposed at the other side or the outer side of the storage body **210**.
[0322] The push installation portion **213** may include a seating groove **2131** that extends through the side surface of the storage body **210** or is recessed in the side surface to accommodate the push portion **260**, a support **2132** that is disposed inside the seating groove **2131** to support one end of the push portion **260**, and an insertion hole **2133** defined at one side of the support **2132** to completely extend through the storage body **210** such that the other end of the push portion **260** may be inserted thereinto.
[0323] The seating groove **2131** may be defined in a shape the same as an external shape of the push portion **260** to accommodate the entire push portion **260** therein, and the support **2132** may be recessed to correspond to a thickness of the push portion **260** such that the push portion **260** does not protrude excessively from the storage body **210**.
[0324] The support **2132** may serve as a center of a lever or a center of a seesaw. Accordingly, when the push portion **260** is pressed, only the other end thereof may be inserted into the insertion hole **2133**, and when the external force disappears, as the locking hook **440** and the fixing body **410** are returned to original locations thereof by the force of the elastic portion **430**, the push portion **260** may be pushed out of the insertion hole **2133** and may be disposed at a correct location.
[0325] FIG. **14** shows a detailed structural embodiment of the fixing portion and the push portion.
[0326] (a) in FIG. **14** is a side view when the fixing portion **400** and the push portion **260** are separated from each other, and (b) in FIG. **14** is a cross-sectional view when the fixing portion **400** and the push portion **260** are coupled to each other.
[0327] The push portion **260** may include a push body **261** disposed at one side of the storage body **210** and exposed to the outside, an extension body **262** extending from the push body **261** inwardly of the storage body **210**, and a coupling body **263** that extends from the extension body **262** toward the fixing portion **400** and is coupled to the fixing portion **400**.
[0328] The push body **261** may be pressed into the storage body **210** by the external force, and the coupling body **263** may further include a coupling groove **2631** into which a coupling protrusion **412** of the fixing body **410**, which will be described later, is inserted and fastened.
[0329] The fixing body **410** may be accommodated inside the storage body **210** and coupled to the push portion **260**. As the push portion **260** is pressurized, the fixing body **410** may reciprocate in the front and rear direction. The fixing body **410** may be formed in a rectangular parallelepiped shape.
[0330] The fixing body **410** may include a body-to-be-inserted **411** that is inserted into the coupling body **263** and coupled to the push portion **260**.
[0331] The body-to-be-inserted **411** may have the coupling protrusion **412** that is inserted into and fastened to the coupling groove **2631**. The coupling protrusion **412** may be formed as a protrusion that protrudes from upper and lower portions of the body-to-be-inserted **411** and is coupled to the coupling groove **2631**.
[0332] Accordingly, when the push portion **260** and the fixing portion **400** are coupled to each other as shown in (b) in FIG. **14**, the body-to-be-inserted **411** may be inserted into the coupling body **263**, and the coupling protrusion **412** may be inserted into the coupling groove **2631**. As a

result, the push portion **260** and the fixing portion **400** are firmly fixed, so that the fixing portion **400** may move as the push portion **260** is pressed.
[0333] The fixing portion **400** may include the connecting body **420** extending downward from the fixing body **410**. The connecting body **420** may be inclined downward toward the mounting portion **300** such that a side surface thereof is supported by the bump **330**. Accordingly, when the push portion **260** slides in the front and rear direction, the connecting body **420** is guided to move in the front and rear direction along the bump **330**, thereby preventing the fixing portion **400** from deviating to the outside of the bump **330**.
[0334] The fixing portion **400** may include the elastic portion **430** disposed to connect the connecting body **420** with the locking hook **440**. Because the elastic portion **430** has an elastic force, when the push portion **260** is pressed, the elastic portion **430** may be compressed and pull the locking hook **440** to the outside of the plate **220**.
[0335] The fixing portion **400** may include the locking hook **440** disposed downwardly of the fixing body **410** such that at least a portion thereof is selectively inserted into the mounting portion **300**.
[0336] The locking hook **440** may include an elastic portion seating portion **441** on which the elastic portion **430** is seated, and a movable surface **442** slidable in the front and rear direction on the mounting portion **300**.
[0337] The elastic portion seating portion **441** may be disposed on a top surface of the locking hook **440**. Accordingly, the elastic portion **430** may pull the locking hook **440** in the height direction to separate the same from the mounting portion **300**.
[0338] The movable surface **442** may be disposed at a lower portion of the locking hook **440** and at a corner of the elastic portion **430**, so that when the elastic portion **430** is compressed, the hook insertion groove **371** may automatically slide and move by the movable surface **442**. As a result, the fixing portion **400** may be prevented from moving in the width direction and may be guided to move only in the front and rear direction.
[0339] FIG. **15** shows an operating scheme of the fixing portion.
[0340] Referring to (a) in FIG. **15**, when the external force pressing the push body **261** is released, the elastic portion **430** may begin to expand and may move the fixing body **410** downward. The elastic portion **430** pushes the locking hook **440** in a direction toward the push body **261** while moving downward.
[0341] In other words, when the push body **261** is in a normal state of not being pressed, the locking hook **440** may be inserted into the hook insertion groove **371** and the storage **200** may be fixed to the mounting portion **300**.
[0342] As a result, even when vibration in the width direction or front and rear direction occurs in the storage **200** or a force to pull the storage **200** to the outside of the mounting body **301** is applied, the storage **200** may not move outward and be fixed to mounting portion **300**.
[0343] The storage **200** must not only be able to be fixed to the mounting portion **300**, but also be able to be detached from the mounting portion **300** when the user desires. The user may separate the storage **200** from the mounting portion **300** by pressing the push body **261** of the push portion **260**.
[0344] Referring to (b) in FIG. **15**, when the push body **261** is pressed, the fixing body **410** and the connecting body **420** move in the direction in which the push body **261** is pressed, and the elastic portion **430** connected to the connecting body **420** is compressed and pulls the locking hook **440** to be withdrawn from the hook insertion groove **371**. As a result, the storage **200** may be separated from the mounting portion **300**.
[0345] Because the mounting portion **300** is located at the rear side of the top cover **20**, the user may press the push portion **260** forward. The push portion **260** may be disposed on one surface of the storage body **210** to be pressed in the front and rear direction of the top cover **20**.
[0346] When the push portion **260** is pressed forward, the fixing body **410** moves forward and the

locking hook **440** moves upward. As a result, the fixing portion **400** may be withdrawn from the mounting portion **300** in the height direction when the push portion **260** is pressed. Accordingly, the direction in which the push portion **260** is pressed and the direction in which the fixing portion **400** moves may be perpendicular to each other.

[0347] Accordingly, the user may press the push portion **260** from the rear side of the top cover **20** to easily separate the storage **200** from the mounting portion **300** in the sliding manner in the width and height directions of the top cover **20**.

[0348] The hook insertion hole **224** of the storage **200** may further include the guide ribs **2241** disposed on both sides of the hook insertion hole **224** to guide the locking hook **440** to move only in the height direction. Accordingly, when the push portion **260** is pressed or the external force pressing the push portion **260** is released, the locking hook **440** may be prevented from moving in the width direction and may be guided to move only in the front and rear direction and the height direction.

[0349] The fixing portion **400** may include a prevention rib **450** protruding from one side surface thereof. The prevention rib **450** may include a first prevention rib **451** that protrudes from one side surface of the connecting body **420** and a second prevention rib **452** that protrudes from one side surface of the fixing body **410**.

[0350] The fixing body **410** or the connecting body **420** may slide along the prevention rib **450** to guide the fixing portion **400** to move in the front and rear direction and to prevent the fixing portion **400** from deviating inwardly or outwardly of the bump **330**.

[0351] FIG. **16** shows a process in which the storage is separated from the mounting portion.

[0352] Referring to (a) in FIG. **16**, the storage **200** is in the state of being mounted on the mounting portion **300**.

[0353] The fixing portion **400** may protrude downward from the plate **220** through the hook insertion hole **224** and be supported on the outer support surface **370**. In other words, as the locking hook **440** is inserted into the hook insertion groove **371**, the storage **200** is fixed to the mounting portion **300**.

[0354] As a result, even when a portion of the bottom surface **222** in the storage **200** is accommodated in the mounting groove **310** and the remaining portion is disposed outside the mounting groove **310** beyond the bump **330**, the storage **200** may be maintained is in the state of being accommodated in the mounting groove **310**.

[0355] In addition, even when the vibration in the width direction or in the front and rear direction occurs in the storage **200** or a force of pulling the storage **200** to the outside of the mounting body **301** is applied, the storage **200** may not move outward and may be fixed to the mounting portion **300**.

[0356] Referring to (b) in FIG. **16**, when the push portion **260** is pressed, the fixing portion **400** may ascend upward. Specifically, when the push portion **260** is pressed forward, the fixing body **410** and the connecting body **420** may also move forward. As a result, the elastic portion **430** may be compressed and the locking hook **440** may ascend upward to be withdrawn from the hook insertion groove **371**.

[0357] When the locking hook **440** ascends, any component of the storage **200** is not restricted by the mounting portion **300**.

[0358] In one example, when the vibration is not transmitted to the storage **200** or there is no outward pulling force, because the discharge portion **230** and the communication portion **390** are coupled to each other, the storage **200** may be maintained in the state of being mounted on the mounting portion **300**.

[0359] When the external force applied to the push portion **260** is released again and the fixing body **410** and the connecting body **420** move rearward and thus the elastic portion **430** expands and the locking hook **440** descends, the storage **200** may be fixed to the mounting portion **300**.

[0360] Accordingly, even when the automatic detergent supply apparatus **1000** is not

accommodated in a drawer or the like, the automatic detergent supply apparatus **1000** may be stably supported because of the structure of the fixing portion **400**. Additionally, because of the structure in which the fixing portion **400** is selectively withdrawn from the mounting portion **300**, the automatic detergent supply apparatus **1000** may be easily separated from the top cover **20** when the user wishes to separate the same.

Claims

1-15. (canceled)

16. A laundry treating apparatus comprising: a cabinet; a tub located inside the cabinet, the tub being configured to store water therein; a drum rotatably located in the tub, the drum being configured to accommodate laundry therein; a top cover coupled to an upper portion of the cabinet, the top cover having an inlet defined therein to allow the laundry to be inserted therethrough; a door pivotably coupled to the top cover to open and close the inlet; a mounting portion located on the top cover, the mounting portion being located rearward of the door; a storage to store detergent therein, the storage being detachably mounted on the mounting portion; and a fixing portion at least partially accommodated inside the storage, the fixing portion being configured to be inserted into and withdrawn from the storage to be selectively inserted into the mounting portion to fix the storage to the mounting portion.

17. The laundry treating apparatus of claim 16, wherein the storage is detachable from the mounting portion by movement in a width direction of the top cover.

18. The laundry treating apparatus of claim 17, wherein the mounting portion includes: a mounting body located on the top cover and rearward of the door; and a restricting surface located at an inner side or one end of the mounting body, the restricting surface being configured to support the storage.

19. The laundry treating apparatus of claim 16, wherein the storage includes: a storage body detachably mounted to the mounting portion, the storage body being configured to store the detergent therein; and a push portion located on the storage body, the push portion being at least partially exposed to outside of the storage body, the push portion being configured such that a pressing direction of the push portion and a moving direction of the fixing portion are perpendicular to each other.

20. The laundry treating apparatus of claim 19, wherein the push portion is located on one surface of the storage body so that the pressing direction is in a front and rear direction of the top cover, and wherein the fixing portion is configured to be withdrawn from the mounting portion in a height direction of the storage body when the push portion is pressed.

21. The laundry treating apparatus of claim 19, wherein the fixing portion includes: a fixing body coupled to the push portion; a locking hook protruding downwardly from the fixing body to be selectively inserted into the mounting portion; and an elastic portion connecting the fixing body to the locking hook.

22. The laundry treating apparatus of claim 21, wherein the locking hook extends towards the push portion.

23. The laundry treating apparatus of claim 21, wherein the storage further includes: a plate located under the storage body, the plate being configured to be detachably seated on the mounting portion; a hook insertion hole defined in the plate, the hook insertion hole being configured to receive the locking hook therein; and guide ribs located on opposite sides of the hook insertion hole to guide the locking hook to move only in a height direction.

24. The laundry treating apparatus of claim 21, wherein the fixing portion further includes ribs located at opposite sides of the fixing body to guide the push portion or the fixing body to move only in a front and rear direction.

25. The laundry treating apparatus of claim 21, wherein the locking hook includes a movable

surface configured to be slidable in a front and rear direction on the mounting portion.
26. The laundry treating apparatus of claim 19, wherein the storage further includes a discharge portion located at a first side of the storage body, the discharge portion configured to be in communication with and detachably coupled to the mounting portion, and wherein the push portion is at a second side of the storage body different than the first side.
27. The laundry treating apparatus of claim 26, wherein the first side is an inner side of the storage body.
28. The laundry treating apparatus of claim 19, wherein the mounting portion further includes an insertion groove at a portion of a top surface of the mounting portion facing the storage body, and wherein the fixing portion is configured to be inserted into the insertion groove.
29. The laundry treating apparatus of claim 25, wherein the mounting portion further includes: a mounting groove configured to support a lower portion of the storage body; a communication portion disposed at a first side of the mounting groove, the communication portion being detachably coupled to the storage body to receive the detergent stored in the storage body; a bump protruding at a second side of the mounting groove different than the first side; and an outer support surface extending outwardly of the bump, the outer support surface being configured to support the storage, and wherein the insertion groove is located at the second side of the mounting groove.
30. The laundry treating apparatus of claim 29, wherein the first side is an inner side of the mounting groove, and wherein the second side is an outer side of the mounting groove.
31. The laundry treating apparatus of claim 29, wherein the insertion groove is located in the outer support surface.
32. The laundry treating apparatus of claim 28, wherein the insertion groove is recessed in a direction perpendicular to the pressing direction of the push portion.
33. The laundry treating apparatus of claim 16, wherein the fixing portion includes: a fixing body; a locking hook protruding downwardly from the fixing body to be selectively inserted into the mounting portion; and an elastic portion connecting the fixing body to the locking hook.
34. The laundry treating apparatus of claim 33, wherein the storage further includes: a plate located under the storage body, the plate being configured to be detachably seated on the mounting portion; a hook insertion hole defined in the plate, the hook insertion hole being configured to receive the locking hook therein; and guide ribs located on opposite sides of the hook insertion hole to guide the locking hook to move only in a height direction.
35. The laundry treating apparatus of claim 16, wherein the mounting portion further includes an insertion groove at a portion of a top surface of the mounting portion facing the storage body, and wherein the fixing portion is configured to be inserted into the insertion groove.