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ABSTRACT

Separator System

In a separator system (S) for the separation and disposal of oil and / or fat that accrues with wastewater, an exchangeable container (B) that has an opening that lies at the top and that has an opening edge (R) is sealed with a removable cover (D) that, with the exchangeable container (B), performs a separator function and that has for this purpose a sealing edge (5) that fits the exchangeable container opening edge (R) and that within the sealing edge (5) on a pipe work (25) has an inlet (Z) and an outlet (A) that are arranged so as to be accessible on the upper side of the cover (D) and from which inlet and outlet pipes (6, 8) extend through the cover (D) whose inlet and outlet openings (7, 9) are spaced at different distances from the underside of the cover (D).

(Fig. 2)

I/WE CLAIM

1. Separator system (S), in particular for the separation and disposal of oil and / or fat that accrue with wastewater, **characterised in that** an exchangeable container (B) that has an opening at the top with an opening edge (R) is sealed with a removable cover (D) that has a sealing edge (5) that fits the exchangeable container opening edge (R) and within the sealing edge (5) has an inlet (Z) and an outlet (A) on an incorporated pipe work (25), wherein the inlet (Z) and outlet (A) are arranged such that they are accessible from the upper side of the cover (D) and from which inlet and outlet pipes (8, 6) extend through the cover (D), wherein the openings (9, 7) of these inlet and outlet pipes (8, 6) are arranged at different distances to the underside of the cover (D), wherein the cover (D), in interaction with the exchangeable container (B). performs a separator function and the exchangeable container (B) for the disposal of at least oil and / or fat (17) separated from the wastewater performs a collection and transport function.
2. Separator system according to Claim 1 **characterised in that** the cover (D) is mounted in a sealed manner on the exchangeable container (B) in place of a standard sealing cover (36) with a detachable sealing mechanism (M) and that, preferably, the sealing mechanism (M) is either the sealing mechanism (M) for the standard sealing cover (36) or is essentially constructed identically thereto.
3. Separator system according to Claim 1 **characterised in that** the exchangeable container (B) is a standard wide-mouth barrel with or without carrying grips (28), preferably with UN approval, or is a standard bucket with grips or a handle, preferably made of a plastic such as polyethylene.
4. Separator system according to Claim 1 **characterised in that** the exchangeable container (B) with mounted cover (D) has a height (H) that is less than the clear space underneath a kitchen counter and / or less than roughly 80 cm.
5. Separator system according to Claim 1 **characterised in that** the cover (D) is preferably a one-piece or pieced together plastic moulded part, and preferably comprises a deep-drawn moulded, blow moulded, rotational moulded or injection moulded part.

6. Separator system according to Claim 1 **characterised in that** the cover (D) has, above the plane of the sealing edge (5) and between the inlet (Z) and the outlet (A), a continuous aeration means (20).
7. Separator system according to Claim 1 **characterised in that** the cover (D) has a handling grip (22) that, preferably, simultaneously forms a continuous aeration means (20) from the inlet (Z) to the outlet (A).
8. Separator system according to Claim 1 **characterised in that** the cover (D) has on the underside, a displacement part (24, V) that protrudes downwards with respect to the plane of the sealing edge (5).
9. Separator system according to Claim 8 **characterised in that** the pipe work (25) is integrated into the inside of the displacement part (24, V) and is fixed in place in the cover (D) with the displacement part (24).
10. Separator system according to at least one of the previous claims **characterised in that** the pipe work (25) has two approximately parallel pipe sockets (8, 6) that, on sides facing away from each other, have in each case on a pipe bend (13) the inlet (Z) and the outlet (A) as well as laterally positioned inlet and outlet openings (9, 7), each at different heights, that the two pipe sockets (6, 8) are fixed to each other by means of at least one strut member (26) and localised in the displacement part (V, 24) that is formed with a cup shape by means of seals (29, 30) or sealed locators at least in the cup bottom (32), and that the cup-shaped displacement part (24, V) is localised by means of a seal (29) or a tight locator with its upper end in a, preferably, central opening (38) of the cover (D), wherein preferably the handling grip (20) formed as a continuous aeration means (21) connects the two pipe bends (13) in a bow-shape.
11. Separator system according to Claim 10 **characterised in that** positioning limit stops (33, 34, 31) are provided on the pipe sockets (6, 8) and on the displacement part (V, 24), in each case on the outside.

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AVI GARG
IN/PA - 1522
Agent for the Applicant

To
The Controller of Patents
The Patent Office at New Delhi

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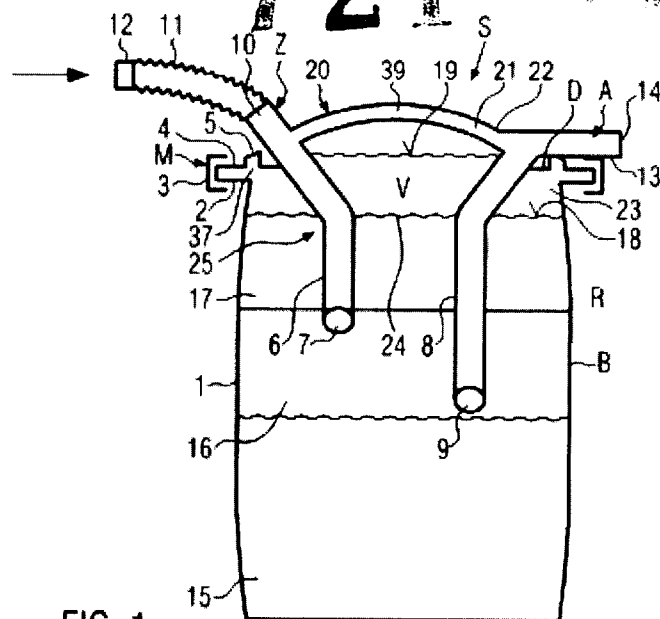


FIG. 1

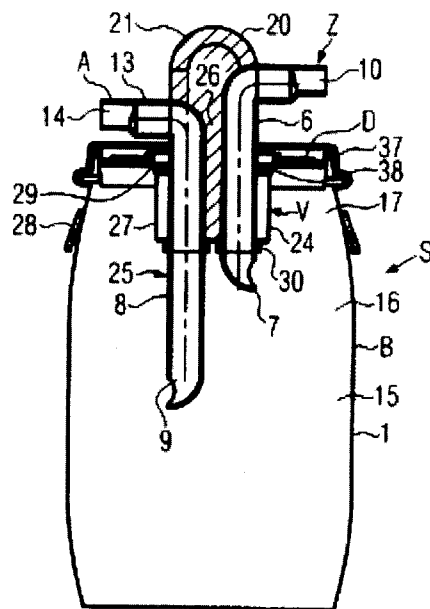


FIG. 2

Avi Garg

AVI GARG
 IN/PA - 1522
 AGENT FOR THE APPLICANT

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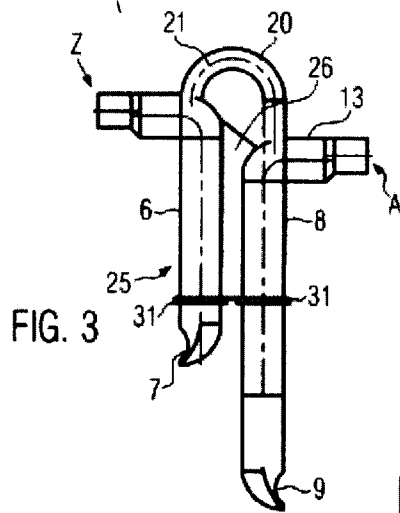


FIG. 3

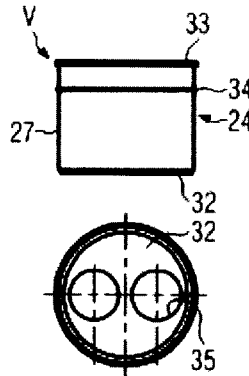


FIG. 4

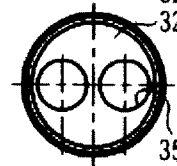


FIG. 5

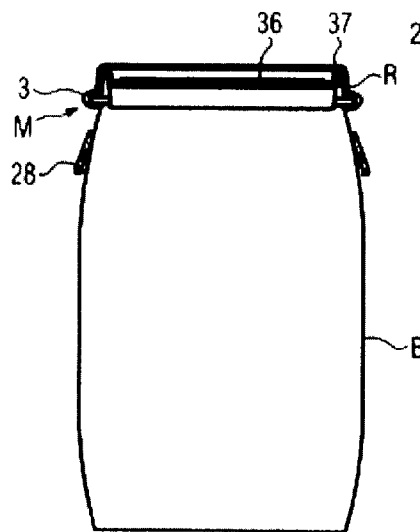


FIG. 7

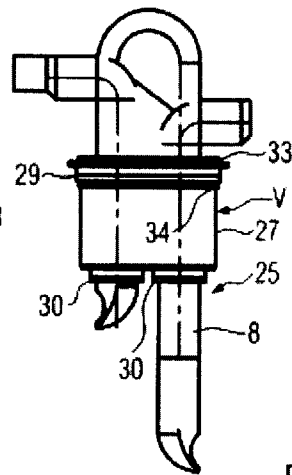


FIG. 6

Avi Garg

AVI GARG
 IN/PA - 1522
 AGENT FOR THE APPLICANT

The invention relates to a separator system in accordance with the introductory portion of Patent Claim 1.

Particularly in third countries in which the prevailing regulations for fat and oil separators are not as strict as in Germany (according to the requirements of the Deutsches Institut für Bautechnik, Berlin, the fat or oil must be skimmed off daily; after the completion of use, at least once a week, a fat separator is to be completely emptied and cleaned), there is a significant demand for a simple and very economical separator system that, for example, allows operators of households, sales kiosks for fried goods, small restaurants, stalls selling foodstuffs, open-air shops and the like to collect fat or oil that accrues, particularly with wastewater, to separate fat and oil, and above all, to collect fat or oil or residues containing fat or oil and dispose of them in a simple manner. Because the cost factor is highly significant in third countries in particular, extremely economical equipment is required for such purposes that is convenient even for lay people to use, that is expedient for environmental protection and that, where applicable, allows the squandered value contained in such waste material or the potential energy contained therein to be used.

Used predominantly for commercial purposes, known fat or oil separators are relatively expensive devices and overqualified for such simple requirements, and consequently are unsuitable for small separation purposes.

In Bavaria and Austria there is an "Energy and fuel from fat" workgroup that supplies households with so-called ÖLI oil collection containers, i.e., simple yellow plastic buckets with a handle and slip-on cover. The user fills old cooking fat or oil into the ÖLI oil collection container via a hose or with another container, seals it and takes it to a collection box at a recycling centre. There then follows central treatment and utilisation, for example by means of burning for generating electricity or in order to produce fuel and to use the residual value or potential energy in these waste materials. This separator system is not suitable for commercial use, but requires the selected isolation and handling of the fats and oil by the user and a corresponding infrastructure for utilisation and disposal, however not for wastewater containing fat and / or oil. For the purposes of resource protection, the recycling product energy is extracted from the used cooking fat or oil waste product. This system could be co-used if a simple separator system existed in which separated oil or fat were ready directly for disposal or transport without prior handling.

Meanwhile there is an increasing effort to protect the environment from the careless disposal of wastewater containing oil and fat and / or to use the energy potential of such waste materials. Especially in third countries that have until now paid no attention to the environmental impact or squandering of the potential energy in such waste materials, such as, e.g., in India, where due to reasons involving the local eating and cooking culture and high population density it is certain that not inconsiderable quantities of wastewater containing fat and / or oil accrue, environmental awareness is increasing and / or is increasingly being called for by the authorities. However poverty, ignorance and tradition result in limits here, so that a more sensible dealing with such waste materials has not been implemented until now, but would have significant chances of being accepted given the availability of a corresponding simple to handle and above all very economical separator system.

The basis of the invention is formed by the object of stating a simple, universal, convenient-to-operate and above all very economical separator system that everyone, also in third countries, would be in a position to operate with some good will, and that, when fat and / or oil accrue in wastewater during the processing of, e.g., foodstuffs, allows the removal of these valuable waste materials and allows the purposeful disposal of these valuable waste materials. In other words, the compost bucket that is certainly also used in third countries is to function as a separator that allows the separation of components containing fat and / or oil from the wastewater, as well as the collection and convenient disposal or supply to recycling of these components.

The set object is solved with the features of Patent Claim 1.

The cover, with its special, integrated pipe work, is the only component that a user must obtain in order to be able to separate and collect at least the fat and / or oil from wastewater burdened with fat and / or oil, in that it conducts the burdened wastewater through the exchangeable container that is sealed with the special cover. Any container that has an appropriate opening edge that fits the cover and is large enough to hold the overlaying inlet and outlet pipes can be used as the exchangeable container. Such exchangeable containers are used globally in any case or are available very economically, but can also be obtained from the manufacturer or seller of the special cover. Such exchangeable containers are, for example, wide-mouth barrels made of plastic that are available in the widest range of sizes around the world and that as a rule are sealed by a suitable standard sealing cover, in the place of which is installed the specially formed cover that performs the separator function with

the exchangeable container. By this it is to be understood that the cover, due to the pipe work, feeds burdened wastewater into the interior of the initially tightly sealed exchangeable container via the inlet, that this wastewater circulates there under a flow abatement, whereby heavier components, if there are any, sink to the bottom, and lighter components such as fat and / or oil or the like rise and gather below the cover. Due to the different levels of the inlet and outlet and the inlet and outlet openings, a spatial separation between the floating light substances, the heavier components that sink to the bottom and a clear water layer are created, whereby from this clear water layer there issues clear water from the separator system via the outlet and whereby this clear water is conducted either into a gully or directly into the sewage system. The inlet can be connected to a wastewater discharge. As soon as so much oil and / or fat has been separated in the separator system that the separator system is no longer in a position to hold more, a disposal or recycling of at least the separated oil and / or fat is due. The user must remove the specially formed cover, seal the full exchangeable container with a standard sealing cover and dispose of the content or supply it for recycling. Then the user can either again combine the emptied exchangeable container with the specially formed cover or mount this cover directly on an empty exchangeable container that is kept ready. Then the separator function is again usable immediately. The exchangeable container performs the collection and transport function for the disposal or for the supply to recycling. The cover can be manufactured in a constructionally simple, economical manner and is easy to transport even over large distances, while in most cases the exchangeable container is available locally in any case. The handling is very simple and also easily understandable for the lay person. The use of the separator system reduces the environmental impact and makes it possible to use the residual value or potential energy of the oil and / or fat, for example, for the production of electrical energy or fuels.

In an expedient embodiment, the cover with pipe work is mounted in a sealed manner on the exchangeable container in place of a standard sealing cover. The standard sealing cover is usually a part of the locally available exchangeable container. The detachable sealing mechanism with which the cover with the pipe work is localised is either the sealing mechanism that is provided in any case for the standard sealing cover or has essentially the same construction as this. Consequently, for example, in the case of a wide-mouth barrel, the clamping ring that is in itself provided for the standard sealing cover can be used in the same way for localising the cover with the pipe work or, in the case of a standard sealing cover with sealing clamps or the like arranged thereupon, the cover with the pipe work can be provided with corresponding sealing clamps that fit the exchangeable container that is then used.

In an expedient embodiment, the exchangeable container is a standard wide-mouth barrel with or without carrying grips, preferably with UN approval, or a standard bucket with grips or a handle and namely, preferably, made from a plastic such as polyethylene. Standard wide-mouth barrels in different sizes are available around the world at low production costs. Carrying grips or carrying recesses simplify the transport of the full exchangeable container during disposal. In the same way, a standard bucket with grips or a handle can be used as an exchangeable container that can also be conveniently transported when full. Plastic as a material for the exchangeable container results in a low weight, is relatively resistant to soiling, is chemically resistant or only slightly shows a dirt adhesion tendency, e.g., due to inert surfaces, and the like, although exchangeable containers made of another material, for example, sheet metal, or even a barrel made of wood, are likewise usable in order on the one hand to perform, with the cover and pipe work, the separator function and on the other hand, to allow, without this cover and e.g., with the standard sealing cover, the transport function.

In an expedient embodiment, the exchangeable container with mounted cover has a height that is less than the clear space underneath a kitchen counter and / or less than roughly 80 cm. This size allows, for example, accommodation of the separator system under a countertop or under a sink from which the burdened wastewater comes. Furthermore, a height of less than roughly 80 cm has the advantage that a user is easily in a position to handle a full exchangeable container alone.

In an expedient embodiment, the cover with the pipe work is a moulded plastic part that can be in one piece or can be pieced together and that is manufactured from plastic, or whose component is or components are manufactured from plastic in accordance with deep-drawing moulding, blow moulding, rotational moulding or injection moulding methods. These moulding methods allow a high level of contour accuracy and a large variant of shapes at low manufacturing costs.

In an expedient embodiment, the cover has a continuous aeration means above the plane of the sealing edge, expediently between the inlet and the outlet, whereby this aeration means favours the flow of the burdened wastewater into the separator system and the draining of the clear water.

In a further embodiment, it can be expedient if the cover has a handling grip that, for example, can be used for transferring the filled exchangeable container or for the mounting or removal of the cover with the pipe work in the event of an exchange of the exchangeable container. Particularly expediently, the handling grip fulfils a double function if it also forms a continuous aeration means from the inlet to the outlet. Not only does the aeration means offer the advantage of a uniform and high throughput through the separator system, it also makes it possible to conduct burdened wastewater directly from the inlet into the outlet in the event that the pipe work is to be moved and / or the exchangeable container is already full.

In an especially expedient embodiment, the cover has on its underside a displacement part that protrudes downwards with respect to the plane of the sealing edge. When the cover is mounted, this displacement part takes up a certain volume in the interior of the exchangeable container that displaces the separator content when the exchangeable container is full. If the cover is now removed, i.e., raised, for an exchange of the exchangeable container, then the displacement part gradually releases enough volume in the exchangeable container in order that the wastewater, oil and / or fat present in the pipe work and / or exchangeable container does not overflow, and instead remains in the exchangeable container. The volume taken up by the displacement part is expediently selected in such a way that after the removal of the cover from the full exchangeable container, its sealing and opening edge remains free in order to make it possible to put on the standard sealing cover conveniently.

The pipe work in the cover is expediently integrated inside the displacement part of the cover and, preferably, fixed in place in the cover with the displacement part. The pipe work consequently becomes a stable part of the cover.

In an expedient embodiment, the pipe work has two approximately parallel pipe sockets that have, on sides that face away from each other and in each case on a pipe bend, the inlet and the outlet, as well as, on the other side of the cover, the expediently laterally placed inlet opening and outlet opening, each at different levels with a view to the required separator function. The two pipe sockets can be fixed to each other by means of at least one strut member and are localised in the displacement part that is, for example, formed in the shape of a cup, by means of seals or tight locators, for example, in openings in the cup bottom. For its part, the cup-shaped displacement part is localised with its upper end in an opening of the cover, preferably centrally, by means of a seal or a tight locator, such as an adhesion or a weld seam. If a continuous aeration means is provided, this can be provided as a handling grip

in a bow shape between the two pipe bends in order to favour the flow, can be positioned in a manner favourable to the grip and additionally can support the pipe sockets on each other.

In a further embodiment, positioning limit stops can be provided on the outside of the pipe sockets and outside of the displacement part, whereby these positioning limit stops simplify or give a convenient mounting of the pipe work and the displacement part in the cover in the manner predetermined by the manufacturer or can simplify or give relative positioning.

Embodiments of the object of the invention are explained on the basis of the drawings. Shown are:

Fig. 1 a schematic vertical sectional view of a ready-to-operate separator system,

Fig. 2 a vertical section of a concrete embodiment of a separator system, similar to Fig. 1,

Fig. 3 a side view of pipe work,

Fig. 4 a side-view of a cup-shaped displacement part,

Fig. 5 a top view on to the displacement part of Fig. 4,

Fig. 6 the pipe work of Fig. 3 in the mounted state in the displacement part of Fig. 4 and 5,
and

Fig. 7 an exemplary exchangeable container that can be used for the separator system and that has a standard sealing cover, in a vertical cut.

The core of the invention is a simple to use, economical separator system S, i.e., a so-called small separator for the kitchen in a household, a sales kiosk, a small restaurant, a "chips shop" or the like, i.e., for a user who produces wastewater burdened with fat and / or oil during the handling of, for example, foodstuffs. The separator system S is a measure for resource protection, because a recycling product in the form of energy or fuel can be extracted from the "used cooking fat" or "used cooking oil" waste product and the impact on the environment can thereby be reduced. It is possible, so to speak, to replace a compost bucket or rubbish bin with a separator in a simple manner. The user is relieved of the tedious and unhygienic disposal

and cleaning as in the case of a fat separator of conventional construction, and can use the separator system S conveniently and hygienically. The separator system is thereby no longer even removed from the exchangeable container, and instead the exchangeable container with the content is disposed of or supplied to recycling and exchanged for an empty exchangeable container. In a return system, the separator content can be utilised and the exchangeable container can be cleaned and brought back. In this way, fat deposits in a downstream wastewater line can also be avoided, for example, in private households. It is important hereby that any exchangeable container B that fits the cover D formed with the pipe work can be used that is available locally and that has an inner height or a holding capacity with which the expedient separator and collection function can be managed. It is only necessary to obtain the cover with the pipe work, which can be manufactured easily and can also be transported across long distances economically.

The separator system S indicated schematically in a sectional view in Fig. 1 allows oil and / or fat that, for example, arises during the handling of foodstuffs or during cooking, with and without wastewater, to be separated from wastewater or directly, so that it only needs to be conducted through the separator system S that is appropriately set up and connected.

The core of the separator system S of Fig. 1 is the cover D formed with pipe work 25. The exchangeable container B can be any, e.g., standardized collection container made of plastic or another material, and has a base body 1 that is open at the top and that has a circumferential flange and an opening edge R that can have a round or any shape. Furthermore, a detachable sealing mechanism M is provided that, in the embodiment shown in Fig. 1, comprises a clamping ring 3 that, with the flange 2 of the exchangeable container B and a clamping ring-trim ring 4, produces a sealed closure between the cover D and the exchangeable container B around a sealing edge 5 of the cover D, where applicable using a seal 37, thereby however making it possible at any time to remove the cover D and put on a standard sealing cover 36 (Fig. 6) in its place.

The installed cover, in functional interaction with the exchangeable container B, thereby provides a separator function, because burdened wastewater that is conducted in circulates from the inlet in the exchangeable container B and, under the influence of gravity, heavier components, if any, sink to the bottom (layer 15), components lighter than water, such as for example oil and / or fat, rise and separate (layer 17), and in between these, a layer 16 of clear water remains from which layer the clear water is drawn off into the sewage system via the

outlet A or is only drawn off. Burdened wastewater that is conducted into the separator system S leaves as clear water after the separation and is then, e.g., drained into the sewage system or drained generally. The exchangeable container B, on the other hand, fulfils a collection and transport function for the separator content, and can, for this purpose, be sealed with its standard sealing cover 36 and conveniently transported away.

The pipe work 25 has an inlet Z and at least one outlet A, for example, each on a pipe bend 13, with openings 10, 14, whereby between the inlet Z and the outlet A a continuous curved aeration means 20 can be provided that, for example, simultaneously forms a handling grip 21 for the cover D or the separator system S. The opening 10 of the inlet lies higher above the sealing edge 5 of the cover D than does the opening 14 of the outlet A. From the inlet Z and from the outlet A, a pipe socket 6 extends downwards through the cover until above the underside of the cover, whereby lower inlet and outlet openings 7, 9 of the pipe sockets 6, 8 are spaced at a distance from the underside of the cover and lie at different levels, i.e., the outlet opening 9 is at a greater distance from the underside of the cover D than is the inlet opening 7.

When the exchangeable container B is full, then, for example, the clear water layer 16 lies between the openings 7, 9 while the oil and / or fat layer 17 floats above the inlet opening 7 and initially extends up to a level 18 (air space 23), however it then, with the operation of the separator system S, rises up to a level 19 that can even lie higher than the sealing edge 5 of the cover D, as long as this cover is mounted in a sealed manner. Should the pipe work 25 no longer be continuous or should the exchangeable container B be full, the incoming wastewater flows directly from the inlet Z into the outlet A via the aeration means 20.

In the embodiment in Fig. 1, a connection piece 11, for example, a flexible hose, is connected to the opening 10 of the inlet Z, whereby this connection piece can preferably be fashioned on its end at 12 to fit a sink outlet and, where applicable, as a detachable quick-release fastener. The connection piece can alternatively be connected to the opening 10 with a quick-release fastener. The opening 14 of the outlet A can be connected to a connection, for example, suitable for a sink downpipe (not shown) or to the sewage system. Here again it would be possible to provide a connection piece 11.

In the embodiment in Fig. 1, the cover D is formed with at least one displacement part 24 that can be solid or hollow and that is integrated into the pipe work 25. The displacement part 24

protrudes downwards with respect to the plane of the sealing edge 5 beyond the underside of the cover D and, when the cover D is correctly mounted, takes up a predetermined volume in the interior of the full exchangeable container B that is, for example, sufficient to let wastewater continue to run when the cover D is raised and to let the fat or oil layer 17 sink so far that nothing leaves outwards over the opening edge R, and instead finally the upper level stands slightly below the opening edge R before the standard sealing cover 36 (Fig. 6) is put on.

In Fig. 1, the level can rise up to the indicated level 19, which is, for example, defined by the lower edge of the opening 14 of the outlet A. If accruing wastewater cannot flow through the separator system S swiftly enough, where applicable it temporary takes the diversion directly to the outlet A via the aeration means 21 so that then there can be a level '39. Disposal is advisable, for example, in the case in which the layer 17 of the fat and / or oil is so thick that it reaches the inlet opening 7.

In Fig. 1, the cover D is formed with at least one displacement part 24, which can be solid or hollow, and into which, preferably, the pipe work 25 is incorporated. The displacement part 25 protrudes downwards with respect to the plane of the sealing edge and the underside of the cover D and, if the cover D is installed correctly, takes up a predetermined volume in the interior of the exchangeable container B. The purpose of this displacement part 24 is to prevent subsequently running wastewater and / or fat or oil extending up to level 19 from overflowing when the cover D is removed before a disposal of the separator content. When the cover D is lifted, the volume of the displacement part 24 is namely gradually released in the content so that after the removal of the cover D with the pipe work 25 from the full exchangeable container B, the filling level in this exchangeable container B expediently remains somewhat below the opening edge R.

The outlet opening 9 lies deeper than the inlet opening 7, whereby a layer 16 of clear water stands in the interval between the openings 9, 7, for example, when the exchangeable container B is full, whereby below this layer 16 solid components, such as sludge, are separated in the layer 15 on the bottom. Components that are lighter than water, e.g., oil and / or fat 17, are raised and extend up to the underside of the cover D, or normally up to the level 19 corresponding to the opening 14 of the outlet, or, in the case of a strong accrual of wastewater, even up to the level 39 that is defined by the continuous aeration means 20 that connects the inlet Z to the outlet A. The aeration means 20 is expediently a handling grip 21 in

the form of a curved bracket for the convenient handling of the cover D. Alternatively, a separate handling grip 21 (not shown) could be provided on the cover D in addition to an aeration means 20.

In functional interaction with the particular exchangeable container B that is used, the cover D performs a separator function, namely, thanks to the arrangement with the pipe work 25, while the respective exchangeable container, in combination with the cover D, has a collection function, and after the removal of the cover D and replacement with a standard sealing cover 36 (Fig. 6), has a transport and / or disposal function in which it is transported in the full or almost full state either to a disposal location or to a recycling location. The exchangeable container B is emptied and expediently cleaned, before it is brought back either directly or later. If the exchangeable container B is not brought back until later, an empty exchangeable container B of the same or similar kind can again be combined at the location with a cover D in order to make it possible to use the separator system S again immediately. The type and the material of the exchangeable container B play no role hereby, as long as it is ensured only that the opening edge R fits the cover D. In order to make it possible here to combine different sizes of opening edges with one type of a cover D where applicable, it would be conceivable for the sealing edge 5 of the cover D to be arranged such that it fits different sizes of opening edges R of different exchangeable containers B.

Fig. 2 shows a concrete embodiment of a cover D in a vertical section. The cover D here is combined with an exchangeable container B for the separator operation, whereby the exchangeable container is formed as a standardized wide-mouth barrel, e.g., with UN approval, for example, made of plastic, and whereby with its base body 1 it provides the volume in which solid components such as sludge 15 are collected on the bottom where applicable, above which stands a layer 16 of clear water on which a layer 17 of oil and / or fat floats. The wide-mouth barrel has, for example, carrying grips 28 or gripping recesses (not shown) as is customary in the case of such standardized exchangeable containers. The exchangeable container B could, however, also be a bucket or another container whose opening edge fits the cover D.

In the embodiment in Fig. 2, the pipe work 25 that is incorporated into the displacement part V, 24 has two pipe sockets 6, 8 that run essentially parallel to each other and that penetrate the cover D roughly vertically, whereby on these pipe sockets 6, 8, the inlet and the outlet Z, A are formed by pipe bends 13 such that the upper openings 10, 14 are oriented essentially

horizontally, however at different levels, whereby the inlet Z is positioned higher than the outlet A. The pipe sockets 6, 8 have at the bottom, for example, lateral inlet and outlet openings 9, 7, e.g., in the style of scoops, whereby the inlet opening 7 is positioned at a distance below the underside of the cover D, however the outlet opening 9 is considerably farther below the underside of the cover D than is the inlet opening 7. The two pipe sockets 6, 8 can, e.g., be connected to each other by means of at least one strut member 26, and where applicable, also via the handling grip 21 that connects the pipe bend 13 in the manner of a bracket and simultaneously forms the continuous aeration means 20 from the inlet Z to the outlet A. The pipe sockets 6, 8 can, for example, have an inside diameter of roughly 50 mm while the aeration means 21 can have a smaller inside diameter of roughly 20 mm.

In the embodiment in Fig. 2, the displacement part 24, V is formed in the style of an essentially cylindrical cup 27 in which the pipe work 25 is here mounted in a removable manner. The two pipe sockets 6, 8 are namely inserted in a sealed manner with seals 30 in the bottom of the displacement part 24 and the displacement part 24 is inserted and latched in what is here a central opening 38 of the cover D with a seal 29.

The cover D in Fig. 2 is formed as a slip-on cover that fits on and over the opening edge R of the wide-mouth barrel and is localised in a sealed manner by, for example, the clamping ring 3 (Fig. 1). The cover D could alternatively or additionally have a plurality of latch fasteners that allows it to be fixed in place on the exchangeable container B. The clamping ring 3 (Fig. 1) is a sealing mechanism M with which not only the cover D can be localised, but with which, for example, the standard sealing cover 36 (Fig. 7) can also be localised.

Fig. 3, 4 and 5 illustrate the individual components that are built into the cover D in Fig. 2, namely according to Fig. 2, with the seals 29, 30 so that the cover can be taken apart. Alternatively (not shown), the components of Fig. 3, 4 and 5 could also be permanently connected to one another, e.g., glued or welded or produced as a single piece.

The pipe work 25 in Fig. 3 illustrates in addition to the two pipe sockets 6, 8 that are connected to each other by means of the strut member 26 and the handling grip 20, that positioning limit stops 31, for example ring flanges, are formed on the pipe sockets 6, 8 above the inlet and outlet openings 7, 9, whereby in Fig. 2, these are used to restrict the penetration depth of the pipe work 25 into the displacement part 24 in that these positioning limit stops 31 then stand on the upper sides of the set seals 30.

Fig. 4 and 5 show the displacement part 24 with the shape of a largely cylindrical cup 27 that is open at the top and that has, in its cup bottom 32 (Fig. 5), two openings 35 for inserting the pipe sockets 8, 6 from Fig. 3. In Fig. 4, positioning end stops 33, 34 are formed on to the outer side of the displacement part 24, whereby the positioning limit stop 33 is, for example, an upper edge flange of the cup 27 with which this sits on the seal 29 after the insertion into the opening 38 and seal 29. The positioning limit stop 34 is, for example, a ring flange, that in Fig. 2 lies below the seal 29 and prevents the cup 27 from being able to be pressed up out of the opening 38.

Fig. 6 shows these two components in a side view, however, whereby the seals 29 and 30 have already been inserted, but the intermediate product has not yet been inserted into the cover D in accordance with Fig. 2. The positioning limit stop 33 lies on the upper side of the seal 29 that has, for example, a cross-section with an L-shape. The positioning limit stop prevents the cup 27 from being pressed up out of the opening 38 of the cover D. The seals 30 into which the pipe sockets are inserted protrude at the bottom out of the cup 27 that is ready to be inserted into the openings 35 in the bottom of the cup 32 of the displacement part 24.

Fig. 7 shows as an example the exchangeable container B of Fig. 2, ready for disposal with its not further emphasized content, whereby the exchangeable container B is sealed with its standard sealing cover 36, localised by means of the clamping ring 3 that is indicated in Fig. 1 and sealed by the seal 37 that is forced over the clamping ring 3 in a sealed closure.