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| 992,403 | 5/1965 | Great Britain..... | 4/112 |

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**[54] FECES STRAINER FOR PASSING LIQUID  
CONSTITUENTS AND RETAINING SOLID  
CONSTITUENTS COMPRISING PHYSIOLOGICAL  
SPECIMENS  
12 Claims, 13 Drawing Figs.**

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4/110, 128/283

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A61f 5/44, E03d 13/00

[50] **Field of Search**..... 4/110, 111,  
112, 113, 138, 141, 142; 128/2, 283

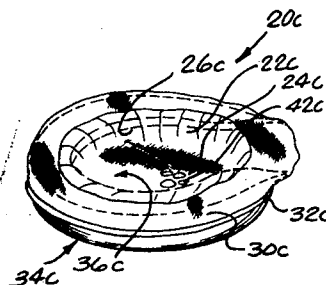
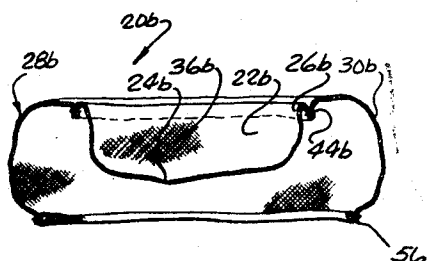
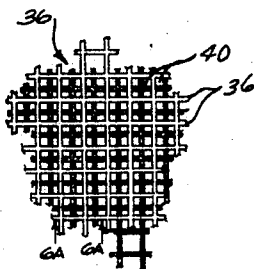
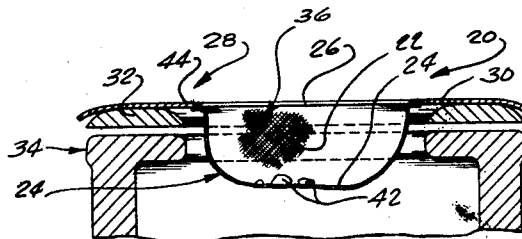
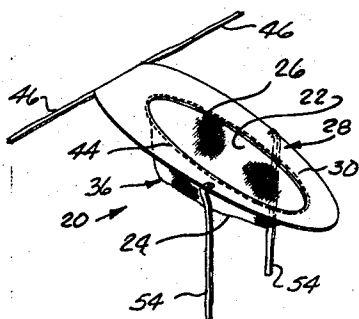
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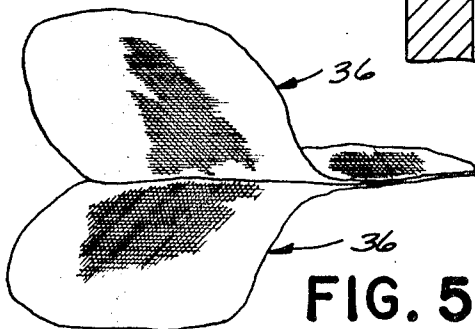
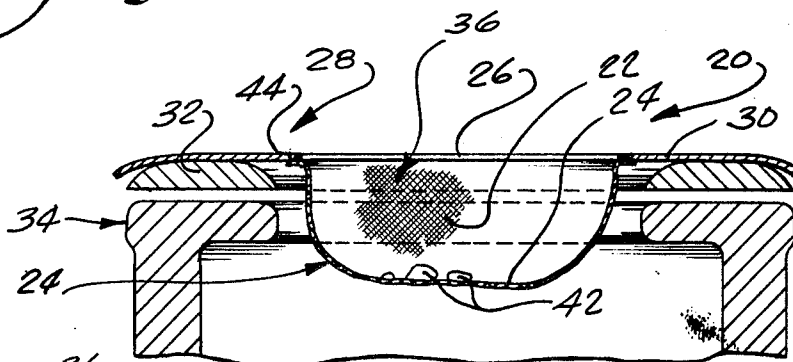
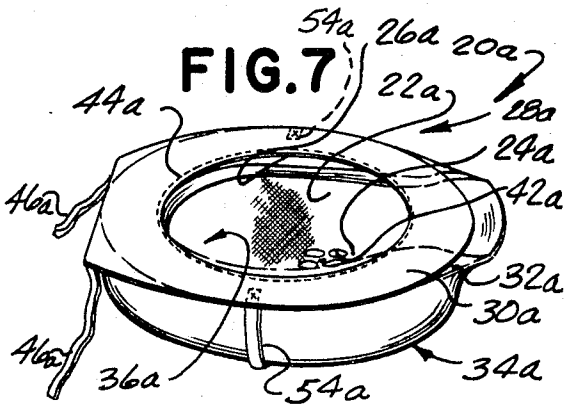
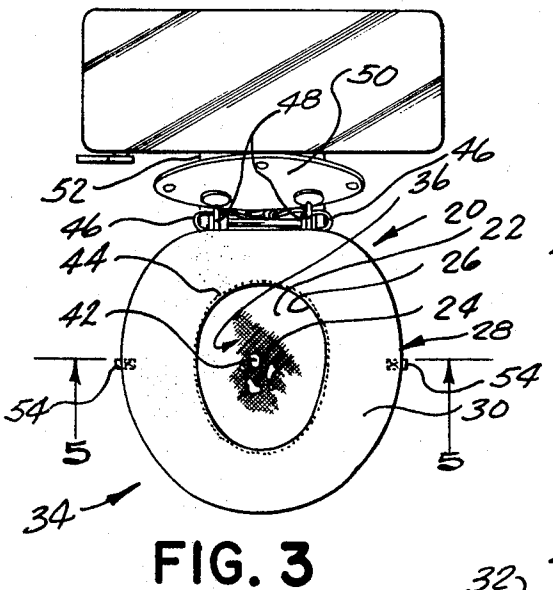
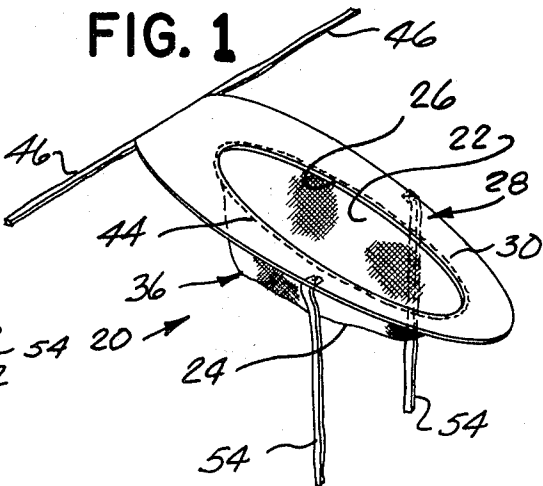
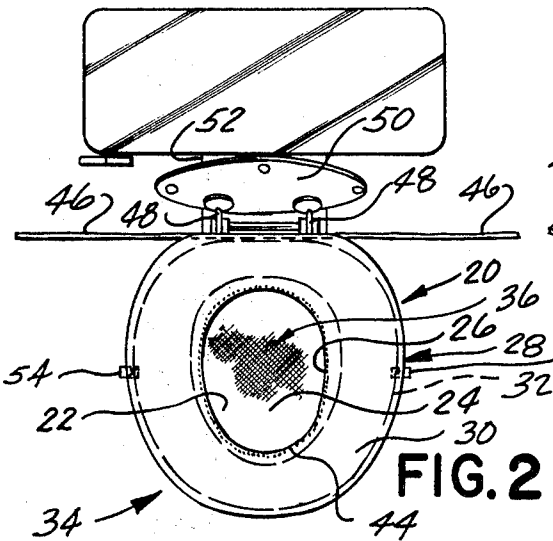
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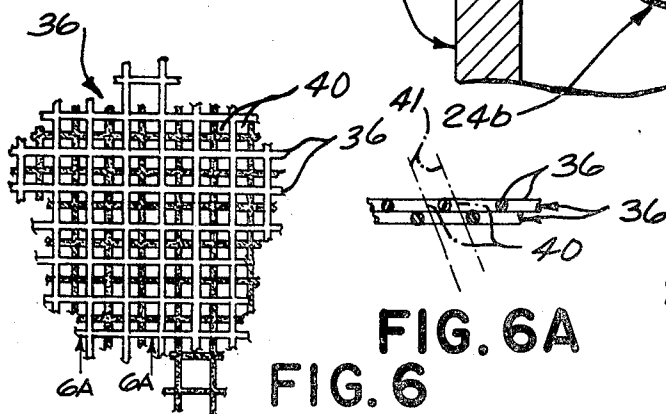
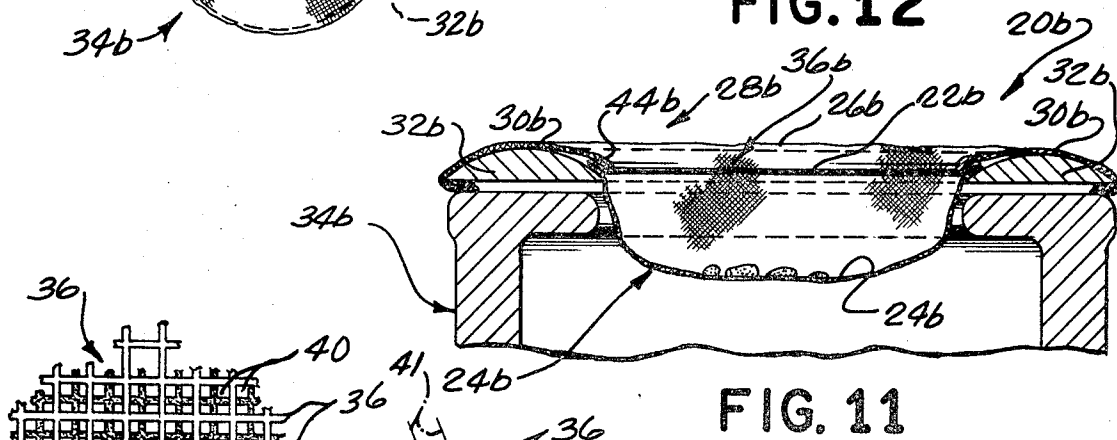
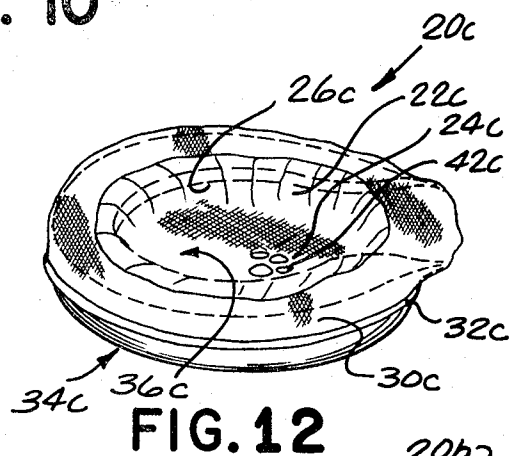
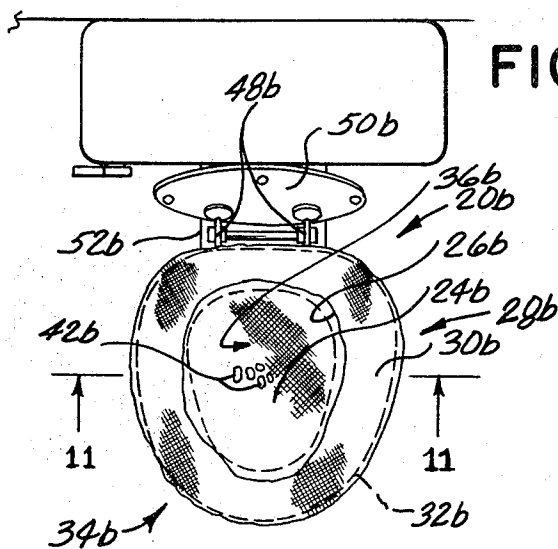
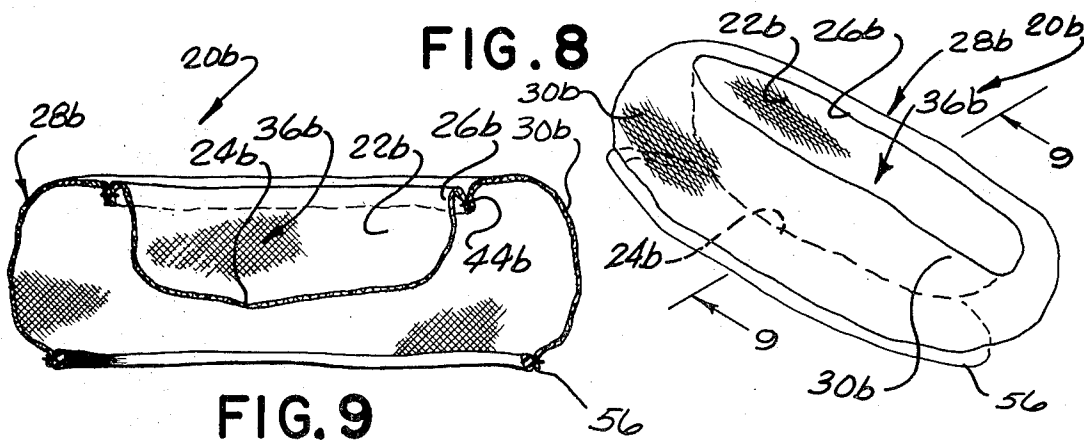
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**ABSTRACT:** The present invention discloses a feces strainer for use in easily and simply collecting a stool specimen, and is characterized by its ability to pass liquid constituents while retaining semisolid and solid constituents in a substantially nonadhesive manner so as to facilitate the removal of solid feces specimen constituents from the strainer. In a preferred form, the feces strainer comprises a shallow receiving bag having a strainer means at the bottom taking the form of netting material made of a substantially liquid-impervious plastic fiber material, thus facilitating the washing, sterilization, and quick drying thereof, and also the previously mentioned, nonadhesive functional characteristics thereof with respect to solid and semisolid feces specimen constituents. In a preferred form the netting material may be made of a double layer configuration having slightly offset and thus effectively size-reduced, complete through-apertures through the double layers thereof, thus producing the effect of a filtering material having very small apertures while being made of a relatively inexpensive, easily obtained double layer form of netting material with each layer having substantially larger apertures. The strainer is provided with means for mounting it easily and simply on any of several different forms of conventional feces-receiving chambers to facilitate the stool collecting use thereof.





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# **FECES STRAINER FOR PASSING LIQUID CONSTITUENTS AND RETAINING SOLID CONSTITUENTS COMPRISING PHYSIOLOGICAL SPECIMENS**

Generally speaking, the specification discloses a feces strainer for passing liquid constituents and retaining solid constituents and which is provided with means for facilitating the fastening of the device over either a bedpan or a toilet seat in operative position. The specification discloses the device as having a shallow receiving bag made of netting material and provided with an upper engagement portion adapted to extend outwardly and to be fastened with respect to a corresponding underlying part of a conventional toilet seat or bedpan in an easy-to-attach and easy-to-detach manner. The shallow receiving bag effectively defines strainer means which is preferably made of a substantially liquid-impervious netting material, which in one preferred form is disclosed as being of multiple-layer construction and which is substantially incapable of absorbing liquid feces constituents and thus passes virtually all of same through the strainer means and, furthermore, does so in a nonadhesive manner relative to the retained solid feces constituents, which, therefore, can be subsequently removed from the strainer means with a minimum of retention caused by adhesion of the solid feces constituents to the netting material. The engagement portion or means also effectively comprises guard means and is preferably made of a material such as material in fabric form, preferably a plastic material having plastic fibers effectively assembled either by being interwoven or otherwise assembled into fabric form, which together with the plastic netting material of the strainer means is capable of being repeatedly washed and/or sterilized to allow repeated use, if desired.

In one preferred form of the invention, the guard and engagement portion may be provided with fastening means, in certain forms comprising fastening tie means for fastening said guard and engagement portion with respect to underlying portions of a conventional feces-receiving chamber means, such as toilet bowl, bedpan, or the like.

In another form of the invention, the engagement portion comprises an outer encompassing portion provided with elastic edge means adapted to be resiliently slipped outwardly over, downwardly and partially under, corresponding upper side portions of a conventional feces-receiving chamber means.

With the above points in mind, it is an object of the present invention to provide a feces strainer having any or all of the advantages referred to herein and including any or all of the features referred to herein generically and/or specifically, and individually or in combination, and which is of extremely simple, inexpensive, easily-manufactured construction, both as to initial capital costs and the subsequent cost of production per item or unit, such as to facilitate the widespread and large scale manufacture, sale, and use of the invention for the purposes outlined herein or for any substantial equivalents thereof.

Further objects are implicit in the detailed description which follows hereinafter (which is to be considered as exemplary of, but not specifically limiting, the present invention), and said objects will be apparent to persons skilled in the art after a careful study of the detailed description which follows hereinafter, and all such implicit objects are intended to be included and comprehended herein as fully as if particularly defined and pointed out herein.

For the purpose of clarifying the nature of the present invention, two exemplary embodiments of the invention are illustrated in the hereinbelow described FIGS. of the accompanying two sheets of drawings and are described in detail hereinafter.

FIG. 1 is a greatly reduced size perspective view of one exemplary embodiment of the invention prior to being mounted upon the seat of a toilet or a corresponding portion of a bedpan.

FIG. 2 is a top plan view of the exemplary form of the invention shown in FIG. 1, but illustrates it after it has been placed

upon the seat of a toilet in overlying relationship with respect thereto but prior to being fastened thereto by the fastening tie means at the rear of the device, which are shown in arbitrarily, laterally extended relationship for reasons of drawing clarity.

FIG. 3 is a view similar to FIG. 2, but shows the device after the rear fastening tie means have been tied around the corresponding portion of the toilet to fasten the device in place.

FIG. 4 is an enlarged fragmentary sectional view taken substantially along the plane and in the direction indicated by the arrows 4-4 of FIG. 3.

FIG. 5 is an enlarged fragmentary perspective view illustrating a portion of the strainer means with the two layers of netting material partially separated in order to clearly illustrate same.

FIG. 6 is a greatly enlarged fragmentary view of a portion of the two-layer netting material of the strainer means comprising any joined part thereof as shown in FIG. 5 which is representative of any portion of the strainer means shown in FIGS. 1-4 inclusive and clearly illustrates the normally somewhat misaligned relationship of the upper and lower layers of the netting material which has the effect of greatly reducing the effective complete through aperture size at any particular location extending through the complete double-layer netting material of the strainer means, said effective through aperture being substantially smaller than any of the individual apertures in either individual layer of the netting material.

FIG. 6A is a greatly enlarged, fragmentary view taken substantially along the plane and in the direction indicated by the arrows 6A-6A of FIG. 6 and most clearly illustrates the effective reduction in the width of the through aperture extending completely through the double layer netting material of the strainer means as compared to the width of any of the individual apertures in either of the two layers of netting material of the strainer means.

FIG. 7 is a reduced-size perspective view illustrating the strainer mounted on a different type of feces-receiving chamber comprising a bedpan rather than a toilet bowl seat.

FIG. 8 is a perspective view generally similar to FIG. 1 but illustrates a modified form of the invention.

FIG. 9 is a somewhat enlarged, cross-sectional view taken substantially along the plane in the direction indicated by the arrows 9-9 of FIG. 8.

FIG. 10 is a view of aspect similar to FIG. 3 but illustrates the modified form of the invention shown in FIGS. 8 and 9 when mounted on a toilet bowl seat.

FIG. 11 is an enlarged fragmentary cross-sectional view taken substantially along the plane and in the direction indicated by the arrows 11-11 of FIG. 10.

FIG. 12 is a perspective view similar in certain respects to FIG. 7 but illustrates the modified form of the invention of FIGS. 8 and 9 when mounted on a different type of feces-receiving chamber means comprising a bedpan.

Generally speaking, the present invention comprises a shallow receiving bag having laterally-enclosing sidewall means, a closed bottom end, and a large open top end with said closed bottom end comprising strainer means and with the receiving bag at or adjacent to the open top end being provided with an engagement portion adapted to engage a feces-receiving chamber means.

In the exemplary first form of the invention illustrated in FIGS. 1-6, the shallow receiving bag referred to above is generally designated by the reference numeral 20, the laterally-enclosing sidewall means is indicated by the reference numeral 22, the closed bottom means is indicated by the reference numeral 24, and the large open top is indicated by the reference numeral 26.

The closed bottom end 24 of the receiving bag 20 comprises strainer means, which is also generally designated by the reference numeral 24, and which takes the form of netting material having a plurality of laterally adjacent small through apertures adapted to effectively allow the passage therethrough of liquid feces constituents while preventing the

passage therethrough and retaining on the upper side thereof solid feces constituents and thus effectively separating said liquid and solid feces constituents (of course, the word "solid" is to be understood as being relative and including everything from semisolid to extremely solid constituents).

In the exemplary first form of the invention illustrated in FIGS. 1-6, the engagement portion mentioned above is generally designated by the reference numeral 28 and comprises an outer portion 30 adapted to effectively engage a corresponding underlying portion of a feces-receiving chamber means, such as the underlying seat portion 32 of the underlying toilet bowl indicated generally at 34 and comprising one conventional form of such feces-receiving chamber means.

In the exemplary first form of the invention illustrated in FIGS. 1-6, the strainer means indicated generally at 24 is made of multiple layers of netting material, each of which is generally designated by the reference numeral 36 and each of which is made up of a rectangular gridlike mesh integrally formed of liquid-impervious plastic fiber material, such as is indicated by the reference numeral 38, and defining therein a plurality of through holes, each of which is designated by the reference numeral 40.

In the exemplary first form illustrated in FIGS. 1-6, each of said layers of netting material 36 defines a rectangular gridlike mesh with the individual plastic fiber strands 38 crossing each other at right angles and thus casing the individual through holes 40 to be of rectangular shape. However, it should be clearly noted that, while this is a particularly advantageous arrangement because such netting material as that shown at 36 is conveniently and inexpensively available, the invention is not specifically so limited and the netting material may assume a variety of different forms, configurations, and compositions, as may the number of layers thereof, all within the broad scope and teachings of the present invention.

In the exemplary first form of the invention illustrated in FIGS. 1-6 inclusive, it will be noted that the two layers of netting material 36 are normally offset or misaligned with each other so as to cause the through holes 40 of the two different layers of netting material 36 to be misaligned, which has the effect of reducing the width dimension or size of any complete through hole extending all the way through both of the layers of netting material 36 of the strainer means 24 at any particular location to an effective through aperture size 41 substantially smaller than the through aperture width of any individual through apertures 40 in either of the two individual layers of netting material 36 and thus provides the functional equivalent of a relatively expensive extremely fine-apertured special-purpose filtering material which would otherwise be required to provide equivalent filtering characteristics and yet this has been attained through the use of marquisette netting which can be obtained at relatively low cost in various different materials such as what is known in the art as "Dacron" or other equivalent materials, which material is especially suitable for the purposes of the present invention because such "Dacron" plastic fiber material is substantially liquid-impervious and thus will not absorb any of the liquid feces constituents adapted to pass therethrough. This will make it possible to wash and sterilize the entire device very easily for repeated use. Also, such "Dacron" material is characterized by being relatively nonadhesive with respect to the solid and/or semisolid feces constituents adapted to be retained on the upper surface thereof which thus will allow said solid feces constituents, such as indicated by the reference numeral 42, to be subsequently removed from the strainer means 24 with a minimum of retention caused by adhesion of the solid or semisolid feces constituents 42 to the layers of netting material 36. While such "Dacron" marquisette netting material is well known in the art, for the record it is hereby pointed out that such "Dacron" plastic fiber material comprises a condensation product of dimethyl terephthalate and ethylene glycol. While this particular type of liquid-impervious plastic fiber material is especially suitable for the purposes of the present invention, it should be noted that in certain forms of the inven-

tion, other substantially functionally equivalent materials may be employed in lieu thereof, and all such arrangements are intended to be included and comprehended within the broad scope of the present invention.

In the exemplary first form of the invention illustrated, the engagement portion indicated generally at 28 comprises the outer encompassing portion 30 which takes the form of an outwardly directed thin-sheet member fastened, such as by sewing, or the like, as indicated at 44 (or otherwise fastened) to the upper edge of the receiving bag 20 and of a size and shape such as to be adapted to overlies and engage a corresponding part of a conventional effective feces-receiving chamber, such as the previously mentioned seat part 32 of the previously mentioned toilet bowl feces-receiving chamber indicated generally at 34.

In said first form of the invention, said engagement portion 28 might also be said to comprise a guard means since it isolates the toilet bowl seat 32 from a person adapted to be seated thereon and, to enhance this feature of the invention, in certain forms thereof, said guard and engagement means 28 may be made of either of a liquid-impervious or liquid-repellent material (in certain forms, a plastic material) which may be of sheet form or of effective fabric form made up of an assembly of strands, either interwoven or otherwise assembled and joined together. While this material may be made of a conventional fabric or a variety of conventional materials, I have found it particularly desirable to make it of a type of plastic fiber material formed into a plastic cloth because of the nonabsorbency characteristics thereof which make it possible to very easily and quickly wash and sterilize same. Therefore, in a preferred form of the invention, the guard and engagement means 28 may be made of such a plastic fiber fabric material having said characteristics. However, said engagement means may be made of various other suitable materials in certain other forms of the invention, and all such arrangements are intended to be included and comprehended within the broad scope of the invention.

The guard and engagement means 28, in a preferred form of the invention as illustrated in FIGS. 1-6, is provided with fastening means for fastening the guard and engagement portion 28 in the proper position over the underlying portions of the feces-receiving chamber means, such as over the toilet bowl seat portion 32 of the toilet bowl 34 as best shown in FIG. 4. In the exemplary first form of the invention illustrated, said fastening means takes the form of tie means 46 at the rear end of the guard and engagement portion 28 which are adapted to be moved from their positions as shown in FIG. 2 either downwardly around the hinge portion 48 attaching the toilet bowl cover 50 relative to the toilet bowl seat 32 or completely around the underlying portion 52 of the toilet, after which said tie members 46 can be tied together, thus effectively fastening the device in the overlying relationship with respect to the toilet bowl 34 most clearly shown in FIGS. 3 and 4.

There are also two additional ties 54 fastened to centrally laterally positioned side parts of the guard and engagement portion 28 which can, if desired, be fastened to corresponding portions of the toilet bowl seat cover 32. However, normally it will be found that this is not necessary and said forwardly positioned fastening tie member 54 need not be used when the device is engaged on a toilet bowl seat 32 in the manner best illustrated in FIGS. 3 and 4.

However when the device is to be fastened on another type of feces-receiving chamber means, such as the particular bedpan indicated generally by the reference numeral 34a in FIG. 7, it will be noted that the forward centrally laterally positioned pair of fastening tie members or straps 54 may be passed completely under the bedpan 34a and tied together to become the means for fastening the entire device in operative overlying relationship with respect to the bedpan 34a. In this case, the two rear fastening tie members 46 need not necessarily be used, although they can be used if a portion of the underlying bedpan 34a can be found of a configuration such as to allow said rear fastening tie members 46 to engage same.

FIGS. 8—11 illustrate a modified form of the invention and, therefore, parts which are functionally or structurally substantially similar or equivalent to corresponding parts of the first form of the invention are designated by similar reference numerals, followed by the letter *b*, however. In this modification, it will be noted that the main difference from the first form of the invention lies in the engagement portion, generally designated by the reference numeral 28*b*, which comprises an outer engaging and encompassing portion 30*b* provided with elastic edge means 56 adapted to be resiliently slipped outwardly over, downwardly, and partially under corresponding side portions of a conventional feces-receiving chamber means, such as a toilet bowl seat 32*b* of a toilet bowl feces-receiving chamber means, indicated generally at 34*b* as best shown in FIG. 11. In other words, in this modification of the invention, there need not be any fastening tie members similar to those shown at 46 or 54 of the first form of the invention, and the engaging and encompassing portion 30*b* and the elastic edge means 56 effectively function for the same retaining or fastening purpose as said tie means 46 and 54 of the first form of the invention, as is clearly apparent from a careful examination of FIG. 11. Otherwise, this modification of the invention is functionally and structurally very similar to the first form of the invention, and it is believed that any further detailed description thereof would be redundant in the light of the full and complete disclosure of the similar first form of the invention set forth hereinbefore.

Fig. 12 is a view somewhat similar to FIG. 7 in that it merely shows the mounting of the modified form of the invention illustrated in FIGS. 8—11 on a different type of feces-receiving chamber means, which in this case is indicated generally by the reference numeral 34*c*, from the toilet bowl shown at 34*b* in FIG. 11. In the FIG. 12 modification, exactly the same form of the device as shown in FIGS. 8—11 is shown mounted on a bedpan type of feces-receiving chamber means, generally designated by the reference numeral 34*c*, and it is not only positioned thereon but is retained thereon in substantially the same manner as that just described in connection with the FIGS. 8—11 form of the invention when mounted on a toilet bowl seat such as that shown in 32*b* and, therefore, it is thought that no further detailed description of the FIG. 12 alternate mounting of said modified form of the invention is necessary or desirable in view of its obvious redundancy in the light of the foregoing complete disclosure of the mounting of said modified form of the invention on the toilet bowl seat 32*b* as best shown in FIG. 11.

It should be noted that the primary purpose of the various exemplary forms of the invention illustrated in the different FIGS. of the drawings and described in detail hereinbefore is providing convenient and reliable means for the collection of stool specimens for use either by an individual himself at home after having been so instructed by his physician, or for use in the physician's office, or at the hospital or medical or clinical laboratory, when such a stool specimen is to be collected for subsequent examination by the physician, clinical or medical laboratory personnel, a parasitologist, a pathologist, or other technical personnel, for diagnostic purposes. This type of stool specimen examination is frequently described by physicians in order to determine the presence or absence of tapeworms, pinworms, roundworms, or various other intestinal parasites or abnormalities, and in the past relatively inefficient means for the collection of stool specimens have been customarily available and it is precisely for the purpose of completely meeting and solving this problem that the various different forms of the feces strainer of the present invention have been invented and developed.

It should also be noted that because of the liquid nonabsorptive character of the material of which the preferred form of the device is made, after it is washed with hot water and soap or detergent and after it is sterilized, if such is desired, it will be found that the device will dry very rapidly and will be ready for reuse very quickly—this being so because of the fact that the material of which the device is made does not absorb water.

It should be understood that the FIGS. and the specific description thereof set forth in this application are for the purpose of illustrating the present invention and are not to be construed as limiting the present invention to the precise and detailed specific structure shown in the FIGS. and specifically described hereinbefore. Rather, the real invention is intended to include substantially equivalent constructions embodying the basic teachings and inventive concept of the present invention.

#### I claim:

1. A feces strainer for passing liquid constituents and retaining solid constituents comprising physiological specimens, comprising: a shallow receiving bag having laterally enclosing sidewall means, a closed bottom end and a large open top end, said closed bottom end of said receiving bag comprising strainer means taking the form of netting material defining a plurality of laterally adjacent small effective complete through apertures operable for passing liquid feces specimen constituents therethrough and for positively retaining solid constituents comprising physiological specimens of relatively small size and larger, said receiving bag being effectively provided at its open upper end with an upper engagement portion extending outwardly and adapted to engage a corresponding portion of a conventional feces-receiving chamber means outwardly adjacent to a conventional top opening in such a conventional feces-receiving chamber means for effectively mounting the entire device in operative relationship across the top of such a conventional feces-receiving chamber means.

2. A feces strainer as defined in claim 1, wherein said netting material is made of substantially liquid-impervious plastic fiber material which is substantially incapable of absorbing liquid feces constituents and thus passes virtually all of same through the effective through apertures thereof while retaining any semisolid or solid feces constituents of a size larger than the average effective through aperture defined by the netting material of the strainer means, and doing so in a nonadhesive manner relative to the retained semisolid or solid feces constituents which can be subsequently removed from the strainer means with a minimum of retention caused by adhesion of the semisolid or solid feces constituents to the netting material.

3. A feces strainer as defined in claim 1, wherein said engagement portion effectively comprises an outwardly directed thin-sheet member taking the form of a nonfiltering, effectively nonapertured engagement and guard means adapted to act as an overlying guard and engagement portion for overlying engagement with respect to a corresponding underlying part of a conventional effective feces-receiving chamber taking the form of a conventional toilet bowl and upper seat portion.

4. A feces strainer as defined in claim 1, wherein said engagement portion effectively comprises an outwardly directed thin-sheet member taking the form of a nonfiltering, effectively nonapertured engagement and guard means adapted to act as an overlying guard and engagement portion for overlying engagement with respect to a corresponding underlying part of a conventional effective feces-receiving chamber taking the form of a conventional bed pan.

5. A feces strainer as defined in claim 1, wherein said engagement portion comprises an outer encompassing portion provided with elastic edge means adapted to be resiliently slipped outwardly over, downwardly and partially under corresponding side portions of a conventional feces-receiving chamber means.

6. A feces strainer as defined in claim 1, wherein said engagement portion is provided with fastening means for fastening same with respect to underlying portions of a conventional feces-receiving chamber means.

7. A feces strainer as defined in claim 3, wherein said engagement portion is provided with fastening tie means for fastening same with respect to underlying portions of a conventional feces-receiving chamber means.

8. A feces strainer as defined in claim 4, wherein said engagement portion is provided with fastening tie means for

fastening same with respect to underlying portions of a conventional feces-receiving chamber means.

9. A feces strainer as defined in claim 1, wherein said netting material of said strainer means takes the form of a double layer of marquisette netting material, with each layer defining a plurality of laterally adjacent small individual-layer through apertures, with the individual layer through apertures of the two layers of said netting material being adapted to normally be somewhat misaligned in actual straining use whereby to define each of said complete through apertures in an effectively further reduced size caused by the misalignment and offsetting of the individual layer through apertures of the two layers of netting material for facilitating the straining efficiency thereof for positively retaining solid physiological specimens of extremely small size without the necessity of using a filtering material having only correspondingly extremely small size filtering apertures therethrough.

10. A feces strainer as defined in claim 9, wherein each of said layers of said netting material is made of substantially liquid-impervious plastic fiber material which is substantially incapable of absorbing liquid feces constituents and thus passes virtually all of same through the effective complete through apertures thereof while retaining any semisolid or solid feces constituents of a size larger than the average effective

complete through aperture defined by the double-layer netting material of the strainer means, and doing so in a nonadhesive manner relative to the retained semisolid or solid feces constituents which can be subsequently removed from the strainer means with a minimum of retention caused by adhesion of the semisolid or solid feces constituents to the netting material.

11. A feces strainer as defined in claim 10, wherein said engagement portion is made of substantially liquid-repellant plastic material, said plastic materials of which said double layers of said netting material and said engagement portion are made being characterized by the ability to withstand repeated washings and/or sterilizations.

12. A feces strainer as defined in claim 1, wherein said closed bottom end comprising said strainer means is of a size and shape such as to be adapted to be inserted downwardly through the normal top opening in a conventional feces-receiving chamber means and said engagement portion at the top of said receiving bag is of a size and shape such as to be adapted to directly overlie solid top portions of a conventional feces-receiving chamber means outwardly adjacent to the normal top opening provided therein.