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STRAINING OR FILTERING DEVICE

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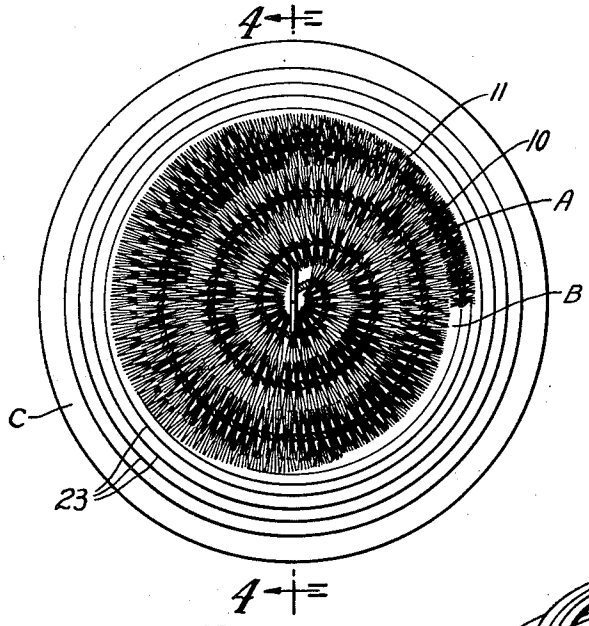


Fig. 1

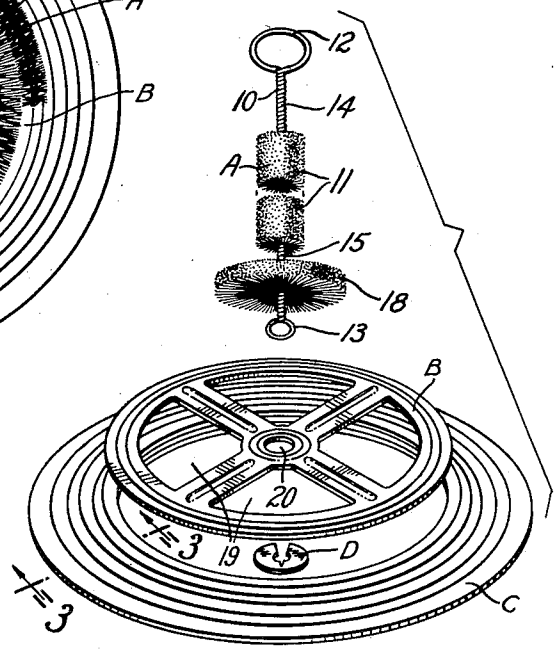


Fig. 2



Fig. 3

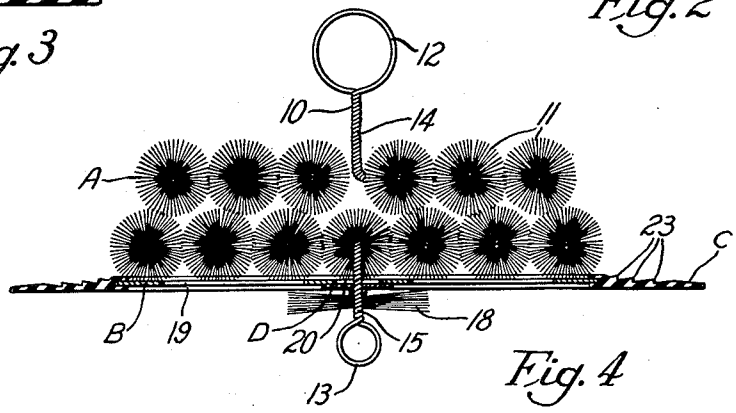


Fig. 4

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STRAINING OR FILTERING DEVICE

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2 Claims. (Cl. 4—292)

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This invention relates to filtering or straining and more particularly to an improved strainer or filtering member or device particularly advantageous for use in kitchen sinks, washtubs, and the like.

Sinks and bathtubs usually have a drain hole closed with a perforated plate, which plate has openings of approximately ¼" in diameter. In some constructions, there is also provided in the drain pipe at some distance such as 2 or 3 inches under the strainer plate, a wire cross designed to supplement the plate in its function of intercepting matter or pieces that would tend to clog the sink drain pipe.

It has been found, however, that in spite of provision of the above described strainer means, clogging of sink drain pipes is a common occurence. When such clogging occurs, it usually produces a serious inconvenience caused by backing up of the sewage from the pipes into the basement, exceedingly heavy and unhealthy odor, and sinks, washtubs, and the like, becoming unuseable. Services of a professional plumber are usually required to clear obstruction in the pipes. This in turn, results in considerable expense, loss of time, and necessity of cleaning and washing the sink, washtubs and the basement floor of the smelly deposits left thereon.

I have found that the above difficulties result primarily from the mistaken understanding that since the sink and washtub drain is usually 2" in diameter (inside), pieces that pass through ¼" dia. openings in the strainer plate will easily pass through the pipe and cannot clog it. I have found further that clogging sediment or deposit on the walls of the drain pipe is relatively hard substance which presents considerable resistance in its removal even by mechanically driven tools such as "plumber's snake". I have further discovered that this deposit is primarily the product of decomposition and hardening of mushy substance such as dirt coagulated with soap film, small particles of garbage covered with grease and mixed with hair and fibers. The fibers are either of food vegetable origin or come from washtubs where fabrics (such as in diapers) fraying at the edges produce, through a period of time, considerable deposits of fibrous materials which reinforces the deposits of fibrous materials which reinforces the deposits on the walls of a sink pipe. Washed or scraped off from the dishes with hot water, greasy solid particles quickly cool in metal pipes, particularly in winter, and stick to the pipe walls. Certain chemical reactions that are taking place within the decaying sediment result in formation of relatively hard crust gradually restricting and soon completely closing the drain pipe. However, even before complete clogging occurs, presence of quantities of decaying greasy particles of meat etc., in drain pipes, provides rich beds for development of large colonies of bacteria only within several feet from the place where food is being prepared. It should be appreciated that late research relating to the nature and origin of polio connects condition of sewer system in homes, particularly in summertime, with outbreaks of polio epidemics. Thus, the above conditions are not only a source of inconvenience, but may be a source of serious danger to the health of the public.

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Use of screen cylinders fitted at the top of the drain pipe has been found unsatisfactory and has virtually disappeared at the present time. Straining capicity of such cylinders is usually extremely low, and they become clogged very fast and usually before the entire dirty contents of a sink have drained out. Under such conditions it becomes necessary to reach for the cylinder for its removal, letting the remainder of the unstrained dirty contents to pass into the drain pipe.

Other similar means have been also offered, but have been found to have similar serious disadvantages.

One of the objects of the present invention is to provide an improved strainer or filtering device for sinks, washtubs, and the like, whereby the above difficulties and disadvantages are overcome and largely eliminated, and improved means are thus provided enabling a housewife to maintain the drain pipe clean and free from objectionable deposits.

Another object of the present invention is to provide an improved strainer member or device which is adapted to intercept and to prevent passage into the drain pipe or sewer system of a house of greasy and mushy substances which upon cooling, deposit on the walls of the pipe and go through a period of decay and decomposition, producing a breeding bed for harmful bacteria.

A further object of the present invention is to provide an improved strainer device of the character specified in the preceding paragraph and performing its specified function without imparing its passing or straining capacity.

A further object of the present invention is to provide an improved strainer device for sinks and bathtubs which can perform the above specified functions without unduly increasing the work

of a housewife or inconveniencing her to any appreciable degree.

A still further object of the present invention is to provide an improved strainer member for sinks and washtubs effective to strain out mushy substances and grease, convenient to handle, to wash, and to keep handy at a sink, or a bathtub.

Further objects and advantages of this invention will be apparent from the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification, wherein like reference characters designate corresponding parts in the several views.

Fig. 1 is a top view of a strainer device embodying the present invention.

Fig. 2 is an exploded perspective view showing the component parts of the device of Fig. 1, with the bristle brush being shown before winding.

Fig. 3 is a sectional view taken in the direction of the arrows on the section plane passing through the line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken in the direction of the arrows on the section plane passing through the line 4—4 of Fig. 1.

It is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

In accordance with the invention I provide means capable of filtering out, or straining, the mushy substance which, although passable through the holes of conventional strainer plates, usually deposits on the walls of drain pipes. In the present embodiment of the invention my device is in the form of a cylindrical brush wound to form a compact member provided with a handle for its convenient handling, and having means to steady it at the drain hole of a sink, washtub, or the like, as well as means sealing the passage for the contents of a sink around the strainer member. The latter means operate also to hold the collected mushy substance and prevent its falling off from the device when the same is removed for cleaning.

Referring to the drawings and particularly to Fig. 2 thereof, the embodiment of the device illustrated therein comprises a cylindrical brush, generally designated by the character A and shown in Fig. 2 before it is wound up; a perforated disc B, a rubber grommet C and a connecting washer D. The above component parts are assembled into a device illustrated in Figs. 1 and 4.

The brush A is an elongated brush assembled on two twisted wires 10, in a manner well known in the art, with bristles being of any suitable character, such as natural bristles, plastic or vegetable bristles, and the like. The bristle portion 11 extends intermediate the looped ends 12 and 13 thereof but leaving bristle-free ends 14 and 15. The bristle portion 11 of the elongated brush A is wound to form a two-layer spiral as is shown in Figs. 1 and 4 with the lower spiral being wound from inside out and its outer end passing over to the second level, with remaining portion of the brush being wound as a spiral in opposite direction, that is, running inwardly with the bristles of the upper layer or spiral being disposed within depressions or valleys between the adjoining coils of the lower loop. The bristle-free upper end 14 of the brush is bent up to form the handle with a loop 12 on its end which may be conveniently taken hold of with the index finger of the user passed through the loop for washing or cleaning of the device. The lower bristle-free end 15 is bent downwardly to extend along the same line with the end 14 and to form a lower handle with another loop 13 which permits holding the device upside down under a faucet in washing.

Into the lower end 15 there is assembled or wound in, a quantity of longer bristles 18 intended, among other things, to steady the device in the drain pipe or to prevent exposure of the drain hole by its extensive movements from side to side.

The disc B, made preferably of sheet metal and ribbed for strength, is provided with apertures 19 to permit free passage of water and with the central hole 20 for passage of the lower end of the brush. In assembly, after such a passage is accomplished, the disc B is connected to the end 15 of the brush with a collar or washer D. Under certain conditions the round hole 20 may be replaced by a slit capable of passing the loop 13, at which slit the disc B may be made to pinch the end 15 and thus effect the desired connection without using a washer such as D.

The disc B carries at its outer peripheral edges a rubber grommet C engaging said edge at a groove provided along the inner edges of the grommet. The grommet C is made thinner and therefor more flexible toward its outer edges and therefore is pressed against the bottom of the sink or washtub by the liquid contents thereof and thus prevent passage of the contents of the sink around the strainer.

Ledges 23 are provided on the upper surface of the grommet C, said ledges sloped abruptly along the outer sides and sloped gradually along the inner sides thus providing valleys for collecting sand. It is well known that sand being very heavy collects not only in the trap, but also in other bends of the pipe from which it cannot be conveniently extracted and also contributes to clogging of sewer pipe. Considerable quantities of sand are washed off potatoes and other vegetables. The above feature is also important for washtub sinks. As is well known to parents, children of both sexes, of the age group of 4–7 years of age carry considerable quantity of sand in their pant pockets and cuffs, as well as socks, which is passed from the washing machine into the washtub or directly into the stem pipe. A cupful of sand at every washing accumulates in the drain pipe to the quantity of one or two pails of sand sufficient in itself to clog a pipe. In addition to the sand collecting function and sealing function specified above, the grommet C also provides an annular shoulder which upholds the mushy substance collected around the bristle portion of the device and prevents its falling off when the device is removed for cleaning.

In operation of the device, the same may be conveniently kept handy at a sink by being hung on a nail or hook on the wall at its loop 12. When a quantity of greasy water containing solid particles is to be poured into the sink, the device is placed in the drainhole whereupon the water is poured in the sink and is permitted to drain. It will be found after the water is drained off that the device collected considerable portions of

mushy and greasy substance which is shaken off into the rubber sink tray, usually provided in every kitchen sink for solid pieces of food, peelings, bones, and the like, to be thrown into the garbage can. The contents of the tray is well capable to retain the mushy substance within the tray since its drain holes are approximately $\frac{1}{16}''$ in diameter and the mushy substance may not even reach the bottom but be retained within other contents of the tray and be thrown into the garbage can. The use of the device in washtubs is similar. In other words, the device is placed into a drain hole or washtub before the water contained therein is drained, or before the contents of the washing machine is emptied into the washtub. Depending upon conditions and habits of a housewife, my improved device may be constantly kept in place in the sink and periodically shaken off and cleaned as described.

In sinks or washtubs wherein the drain hole is arranged relatively close to one of the walls, my device may be made of a modified shape to fit over such holes in spite of one of the walls of the sink or tub being close to it. For instance, for such purposes, my device instead of being made of a circular form, as shown in Figs. 1 and 4, it may be of a substantially half-circular shape. Other modifications in form can be easily devised when conditions or requirements for specific uses of my device become known. It will also be understood that while my improved device has been illustrated and described herein as a straining member for sinks and washtubs, it may be applied with success as a filtering member in various industrial or other applications.

There is thus provided an improved straining or filtering device, whereby the objects of the invention listed above and numerous additional advantages are attained.

I claim:

1. A strainer device for a kitchen sink and the like, said strainer device comprising an elongated cylindrical brush assembled on twisted wires having their ends free of bristles, the bristled portion of the brush being wound to form a flat spiral adapted to close the drain hole with at least one unbroken layer of brush, one bristle-free end of said spiral being bent up to form a handle for the device, and the other bristle-free end being bent down, a perforated disc connected to said lower end, and a rubber grommet connected to the peripheral edges of said disc and adapted to be pressed to the bottom of the sink by the contents thereof.

2. A strainer device for a kitchen sink and the like, said strainer device comprising an elongated cylindrical brush made up by a quantity of bristles assembled on twisted wires with said wires having their ends free of the bristles of said brush, the bristled portion of said brush being wound to form a flat spiral adapted to cover the drain hole with at least one unbroken layer of brush, one bristle free end of said spiral being bent up to form a handle for the device, and the other end being bent down, a quantity of bristles of larger diameter assembled within said bent down end to form a relatively thin yielding circular element adapted to enter the drain pipe to steady the device, a perforated disc connected to said lower end, and a rubber grommet connected to the peripheral edges of said disc and adapted to be pressed against the bottom of the sink by the contents thereof.

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