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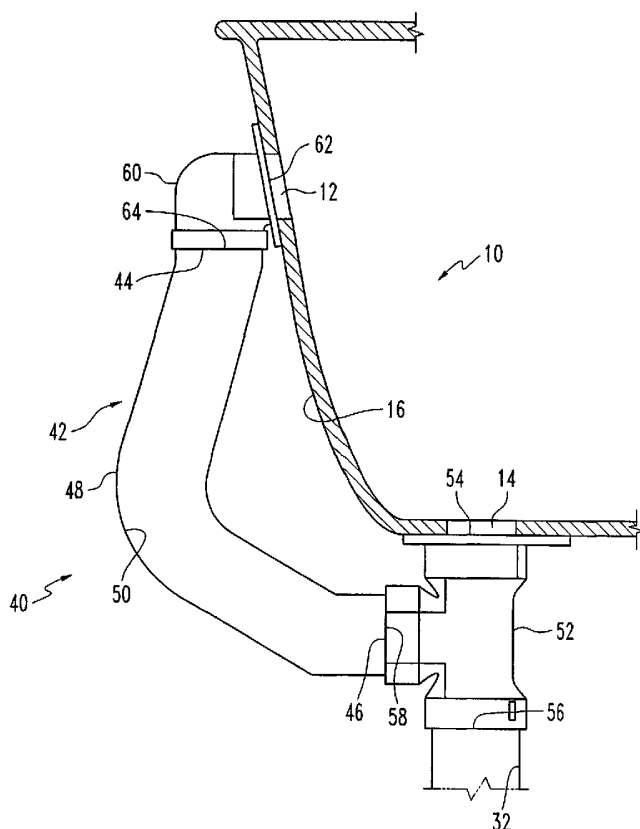
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- with amended claims and statement

[Continued on next page]

(54) Title: FLEXIBLE BATHTUB WASTE PIPE ASSEMBLY FOR BATHTUBS AND THE LIKE



(57) Abstract: A bathtub (10) waste pipe assembly (40) for draining fluid from a bathtub (10) where the bathtub (10) has an upper overflow drain (12) and a lower drain (14). The bathtub (10) waste pipe assembly (40) includes a flexible hollow tube (42) extending from the upper overflow drain (12) to the lower drain (14).



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

TITLE: FLEXIBLE BATHTUB WASTE PIPE ASSEMBLY FOR
BATHTUBS AND THE LIKE

BACKGROUND OF THE INVENTION

In plumbing of bathtubs, existing rigid waste pipe assemblies are used to receive the effluent fluid from the bathtub. These rigid pipes are often difficult to install in the tight spaces about a bathtub. Further, these rigid pipes need to either be properly sized in length, or cut down to a proper length to be installed with the bathtub. Additionally, these rigid assemblies include a multiplicity of pieces, adding to the cost of the assembly, as well as the complexity of installation.

It is therefore an object of this invention to provide a bathtub waste pipe assembly including a flexible hollow tube, wherein the installation of the bathtub waste pipe assembly is simplified.

A further object of the invention is to provide a bathtub waste pipe assembly wherein the length of assembly need not be specifically sized prior to installation.

A still further object of the invention is to provide a bathtub waste pipe assembly wherein the assembly is easily installed in confined spaces.

These and other objects will be apparent to those skilled in the art.

SUMMARY OF THE INVENTION

A bathtub waste pipe assembly for draining fluid from a bathtub where the bathtub has an upper overflow drain and a lower drain. The bathtub waste pipe assembly includes a flexible hollow tube extending from the upper overflow drain to the lower drain.

DESCRIPTION OF THE DRAWINGS

Fig. 1 is a side view of a conventional prior bathtub environment with a rigid waste pipe assembly; and

Fig. 2 is a side view of the device of this invention associated with a bathtub.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to Fig. 1, a conventional bathtub 10 has an upper overflow drain 12 and a lower drain 14. The upper overflow drain 12 is located at one end 16 of the bathtub 10 for draining overflow fluids from the bathtub 10. The lower drain 14 is located in the bottom of the bathtub 10 for draining fluids from the bottom of the bathtub 10.

A conventional prior art rigid waste pipe assembly 20 has an upper rigid pipe 22 oriented in a vertical direction. The pipe 22 is connected to the bathtub upper overflow drain 12 via an upper rigid connector 24. The pipe assembly 20 also has a lower rigid pipe 26 oriented in a horizontal direction. The pipe 26 is connected to the lower drain 14 via a lower rigid connector 28. The pipe 22 and the pipe 26 are joined at a rigid three-way connector 30. The connector 30 receives fluid from both the upper overflow drain 12 and lower drain 14, and directs the fluid to a bottom outlet 32.

Referring now to Fig. 2, a bathtub waste pipe assembly 40 of the present invention for draining fluid from a bathtub is shown. The assembly 40 includes a flexible hollow tube 42. The tube 42 is located outside one end 16 of the bathtub 10, and has a first opening 44, a second opening 46 and a conduit 48 running from the first opening 44 to the second opening 46. The first opening 44 is adapted to be associated in fluid flow communication with the upper overflow drain 14. The tube 42 preferably has a non-corrugated inner surface 50.

The assembly 40 also includes a lower tube connector 52. The second opening 46 of tube 42 is connected to the lower drain 14 of bathtub 10 by means of the lower tube connector 52.

The connector 52 has a first opening 54, a second opening 56, and a third opening 58. The first opening 54 is adapted to be connected in fluid flow communication with the drain 14. The second opening 56 receives fluid from both the upper overflow drain 12 and lower drain 14, and directs the fluid to the

bottom outlet 32. The first and second openings 54 and 56 are located directly opposite one another. The second opening 56 is located directly beneath the lower drain 14 when the first opening 54 is connected in fluid flow communication with the lower drain 14. The third opening 58 is connected in fluid flow communication with the second opening 46 of the tube 42. The third opening 58 is located perpendicular to the first and second openings 54 and 56.

The assembly 40 further includes an upper tube connector 60 adapted to be connected in fluid flow communication with the upper overflow drain 12. The connector 60 has a first opening 62 and second opening 64. The first opening 62 is adapted to be connected in fluid flow communication with the upper drain 12. The second opening 64 is connected in fluid flow communication with the first opening 44 of the tube 42.

In operation, the assembly 40 can receive fluid from upper overflow drain 12 (in an overflow situation) or lower drain 14 (in normal operating conditions). In an overflow situation, the fluid from the upper overflow drain 12 is received into the flexible hollow tube 42. These fluids then flow along flexible hollow tube 42 to the lower tube connector 52 where they are emptied into the bottom outlet 32. Under normal operating conditions, the fluid from the lower drain 14 is received into the lower tube connector 52 where it is emptied into the bottom outlet 32.

The bathtub waste pipe assembly 40 is installed as shown in Fig. 2. It is therefore seen that the installation of the bathtub waste pipe assembly 40 is simplified due to the flexibility of the assembly 40. The assembly 40 can be bent to shorten or extend its length during installation. This eliminates the need to adjust the assembly 40 through choosing the specific length of assembly 40, or the need to cut the assembly 40 to a proper size. In addition, this flexibility also allows the assembly 40 to be more easily installed in confined spaces.

It is therefore seen that this invention will accomplish at least all of its stated objectives.

What is claimed is:

1. A bathtub waste pipe assembly for draining fluid from a bathtub where the bathtub has an upper overflow drain and a lower drain, comprising:
a flexible hollow tube extending from the upper overflow drain to the lower drain.
2. The bathtub waste pipe assembly of claim 1, wherein the flexible hollow tube has a non-corrugated inner surface.
3. The bathtub waste pipe assembly of claim 1, wherein the flexible hollow tube is located outside one end of the bathtub.
4. The bathtub waste pipe assembly of claim 1, wherein the flexible hollow tube has a non-corrugated inner surface.

AMENDED CLAIMS

[received by the International Bureau on 07 July 2003 (07.07.03);
original claim 1 replaced by amended claim 1; original claim 2 unchanged;
original claims 3 and 4 deleted; new claim 5 added (1 page)]

+ Statement

5 What is claimed is:

1. A bathtub waste pipe assembly for draining fluid from a bathtub where the bathtub has an upper overflow drain at one end of the bathtub and a lower drain on the bottom of the bathtub, comprising:
 - 10 a first rigid connector secured to and in communication with the upper overflow drain and having a vertical axis at a substantially right angle to the upper overflow drain; a second rigid connector secured to and in communication with the lower drain; and a flexible hollow tube that fits within and extends from the first rigid connector to the second rigid
 - 15 connector.
2. The bathtub waste pipe assembly of claim 1, wherein the flexible hollow tube has a non-corrugated inner surface.
- 20 5. The assembly of claim 1 wherein the flexible hollow tube fits within the second rigid connector.

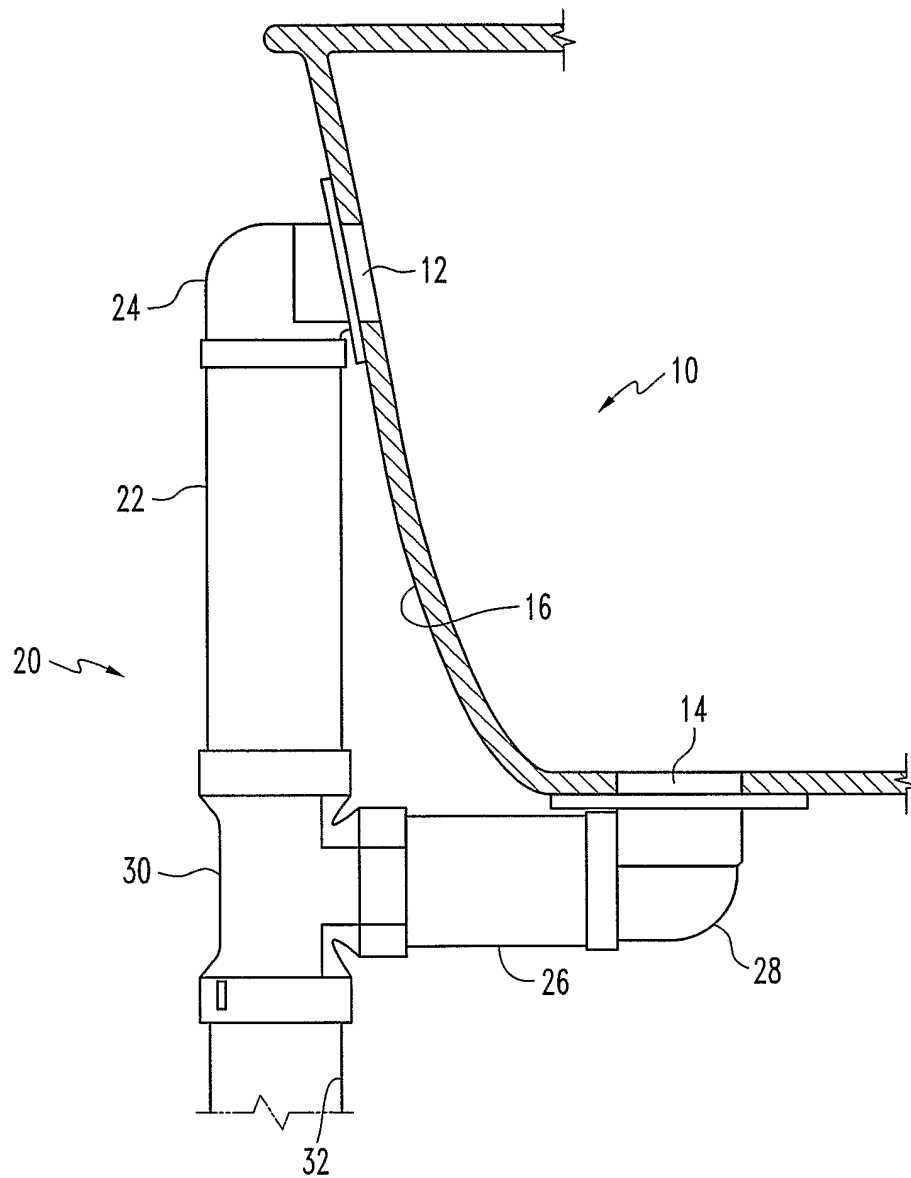
Statement under Article 19(1):

The International Search Report has cited one patent in category X as being of particular relevance. The Morisseau reference, however, does not teach each and every limitation of Applicant's claims 1, 2, and 5.

Accordingly, applicant asserts that each independent claim of the present invention is novel and not obvious in view of the cited references. Further, each dependent claim is likewise novel and not obvious, due at least to their dependence on their respective independent base claims.

Morisseau does not disclose a flexible hollow tube, as required by the Applicant's independent claim 1. Rather, Morisseau discloses a tube 4 that is made of copper. (Lines 75-77). Copper is not a flexible material. The copper tube 4 must be "bent at right-angles" in order to achieve the configuration as shown in Fig. 1. (Lines 76-77). Therefore, Morisseau cannot anticipate the Applicant's invention as the copper tube 4 taught by Morisseau is not flexible, as required by Applicant's claim 1.

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PRIOR ART
FIG. 1

2/2

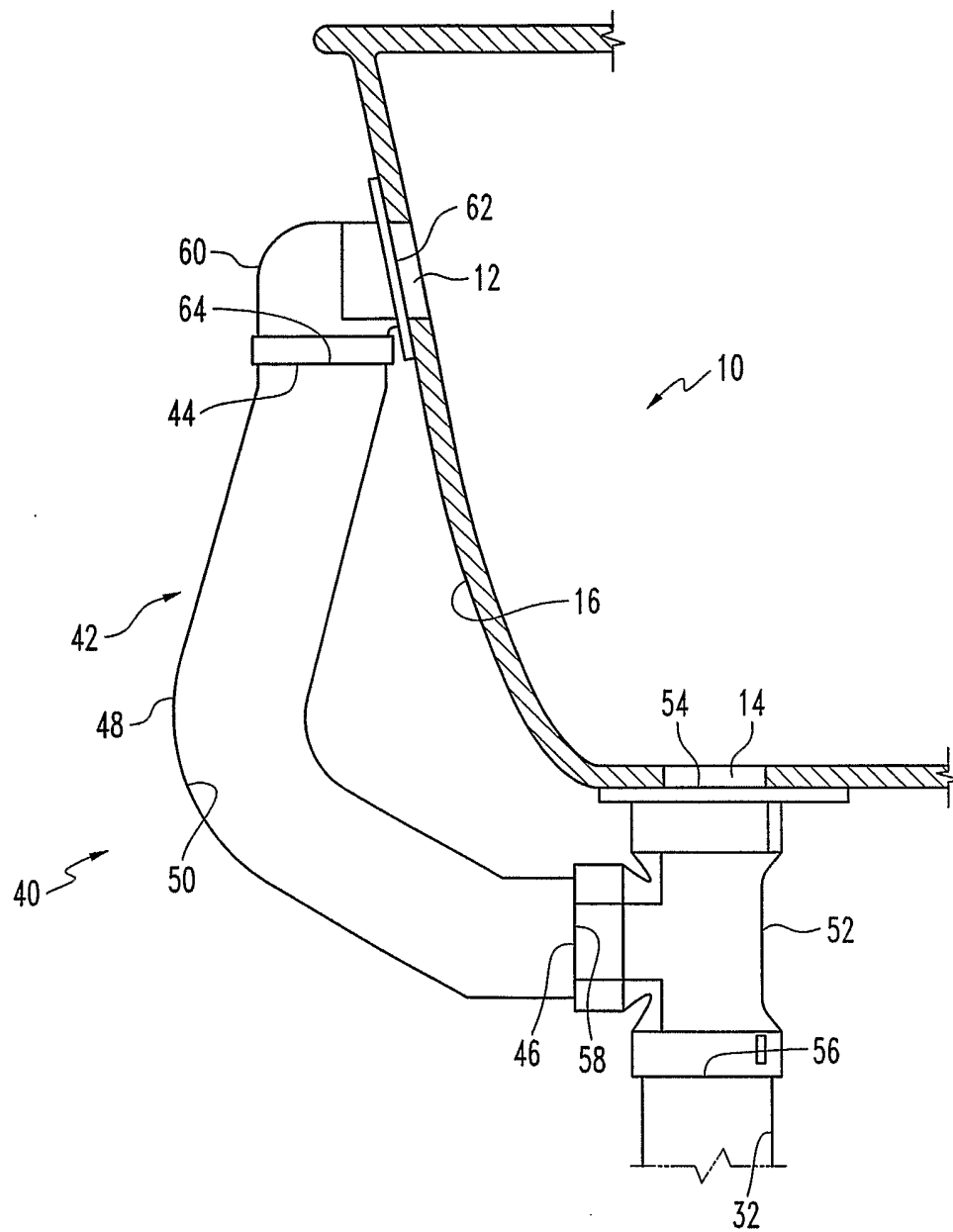


FIG. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/02034

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : E03C 1/232

US CL : 4/680

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 4/680

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 1,980,493 A (MORISSEAU) 13 November 1934 (13.11.1934), see entire document.	1-4



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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