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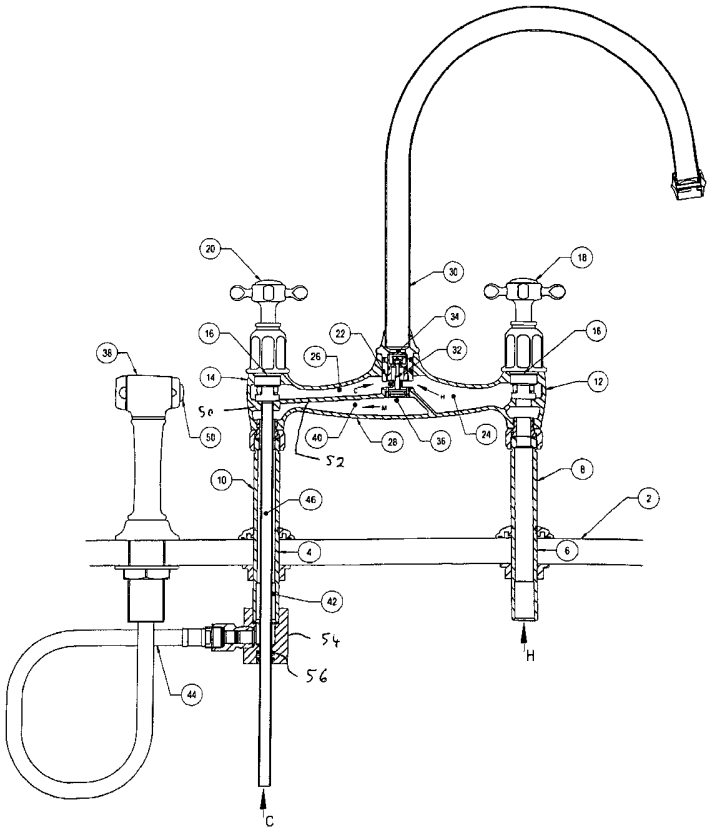
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(54) Title: A PILLAR SINK MIXER WITH HAND SPRAY



(57) Abstract: A pillar sink mixer comprises a hot water tap pillar (8), a cold water tap pillar (10), a mixing chamber (22) and a diverter valve (32) to supply mixed water to a tap nozzle (30) or to a hand spray (38). The mixing chamber (22) and diverter valve (32) are positioned in a bridge (28) above a mounting surface (2), and a passage (40), (42), providing fluid communication with the hand spray device (38), being incorporated within the bridge (28) and a tap pillar (10).

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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.

A Pillar Sink Mixer with Hand Spray

This invention relates to pillar taps in which the tap body is mounted some distance above a work top, and in particular to taps having a mixing system to mix hot and cold water and a separate manually operated spray nozzle attached to the water mixer by a flexible tube. Such arrangements are often found in domestic kitchens.

GB2361047 discloses a pillar tap system that provides a spray nozzle with a separate flexible hose. The water supply to the spray nozzle, and control of the temperature of the water so supplied, comes from the same mixer system as that used for the tap nozzle via a diverter in the mixing chamber. Whilst this system does provide a spray nozzle, it has a number of disadvantages. One disadvantage is that the mixing chamber is under the mounting surface, occupying a large amount of space. The valves controlling the water flow are housed below the mounting surface and controlled by long spindles extending down from the tap levers, through the pillars.

According to an aspect of the present invention there is provided a pillar sink mixer comprising a hot tap pillar, a cold tap pillar and a mixing chamber situated, in use, above a mounting surface for the mixer. The mixing chamber is in fluid communication with a hand spray via a channel that is partially situated within one of the tap pillars.

Tap housings at the top of the pillar stems house the valve chambers and connect via a bridge. A mixing chamber is positioned on the bridge and an outlet nozzle extends from the mixing chamber.

The water passage from one tap housing to the mixing chamber runs alongside a return passage from the mixing chamber to the housing, Within the pillar supporting the tap housing is a passage supplying water to the valve and another passage delivering the water from the return passage to the hose of a hand spray.

Other aspects and features of the invention will be apparent from the following description and the accompanying claims.

The invention will now be described, by way of example only, with reference to the accompanying drawings in which:-

Figure 1 shows a cross-sectional view of an embodiment of the present invention.

Figure 2 shows an enlarged cross-sectional view of the cold tap pillar of the embodiment of Figure 1.

Figure 1 shows a pillar mixer tap forming an embodiment of the present invention. The mixer is mounted on a mounting surface 2, such as a kitchen top or sink rim, in which two holes 4, 6 are formed to receive the two tap pillars 8, 10. Hot water enters the pillar sink mixer through the tap pillar 8, and cold water enters the pillar sink mixer through pillar 10. Each pillar 8, 10 has a housing 12, 14 at its top end which houses a valve chamber and valve 16 operated by levers or handles 18, 20. The housings 12, 14 are both in fluid connection with a mixing chamber 22 via passages 24 and 26 respectively in a bridge 28. When the respective tap valves 16 are opened, water flows into the mixing chamber 22 through the passages 24, 26, and through outlet nozzle 30 which is mounted on the bridge 28 at an outlet 34

of the mixing chamber 22. The arrangement thus far described is well known in the art of pillar sink mixers.

The mixing chamber 22 houses a diverter valve 32 which determines the direction of flow of the mixed water from the mixing chamber 22. The diverter valve 32 has two outlets 34, 36 which lead respectively to tap nozzle 30 and a hand spray 38. The diverter valve 32 is an exclusive output system, therefore whilst the hand spray 38 is in operation, substantially no water will pass to the tap nozzle 30. The operation of diverter valves is well known and is described for example in USA-4,609,006.

Referring to Figure 2, the hand spray outlet channel which provides a fluid communication channel for the mixed water from the mixing chamber 22 to the hand spray 38, comprises three portions 40, 42, 44. The first portion comprises a passage 40 from the second outlet 36 of the mixing chamber 22 to the tap housing 14. Passage 40 is housed within bridge 28, alongside passage 26. The second portion comprises passage 42 that is defined by the wall of tap pillar 10. Within the pillar 10 is a tube 46 which delivers cold water up through the pillar 10 to valve 16. Tube 46 is sealed at its upper end to a valve seat 50 in partition wall 52. Tube 46 extends down within pillar10. These two passages 42, 46 are thus housed within pillar 10. The third portion of the hand spray outlet channel is a flexible hose 44 that provides fluid communication from an outlet 48 from the lower end of the tap pillar 10, beneath the mounting surface 2 to the hand spray 38. A T-shaped union is mounted on the lower end of pillar 10 and tube 46 passes through union 54, with a seal 56 being provided between the tube 46 and union 54 at the lower outlet of the union 54. Flexible hose 44 is coupled to the side outlet of the union 54, in fluid communication with passage 42. The hand spray 38 can be lifted out from the mounting surface 2.

The operation of the hand spray is well known. Valves 16 are opened by turning handles 18, 20 to give the required water flow through nozzle 30 via mixing chamber 22. Cold water passing through passage 46, via valve 16 to passage 26, chamber 22 and nozzle 30. When a push button valve on hand spray 38 is pressed, water can flow from spray 38. Diverter valve 22 is caused to move to close off the outlet 34 to nozzle 30, by the pressure differential across the valve ends, so that water will then flow out of mixing chamber outlet 36. Water flows through passages 40, 42 and hose 44 to spray 38.

It will be appreciated that the passage 40 may be directed towards hot tap housing 12, pillar 8 enclosing the passage 46 and connecting with the hose 44.

The invention provides a pillar mixer with a hand spray function and yet with minimal additional space requirement.

CLAIMS:

1. A pillar sink mixer having a hand spray, in which a hot and cold valves are supported on respective pillars, the pillars being joined by a bridge having a mixing chamber and supporting a tap nozzle,

wherein a water passage from the mixing chamber to the spray extends through one of the pillars.

2. A pillar sink mixer comprising:

a hot tap pillar and a cold tap pillar in a spaced-apart relationship, each tap pillar including a water valve housing, situated above a mounting surface;

a mixing chamber in a bridge situated above said mounting surface between said water valve housings, the mixing chamber having a first inlet in fluid communication with said water valve housing of said hot tap pillar by a first conduit, a second inlet in fluid communication with said water valve housing of said cold tap pillar by a second conduit, and two outlets, a first outlet in fluid communication with a tap nozzle and a second outlet in fluid communication with a hand spray device;

wherein said hand spray device is in fluid communication with said second outlet of said mixer chamber through a hand spray outlet passage a portion of which is housed in at least one of said bridge and a tap pillar.

3. A pillar sink mixer as claimed in claim 2, wherein said mixing chamber includes a diverter valve, arranged to divert the flow of mixed water from said first outlet of said mixing chamber to said second outlet of said mixing chamber, said second outlet being in fluid communication with said hand spray device, when said hand spray device is operated to discharge water therefrom.

4. A pillar sink mixer comprising:

a hot tap pillar and a cold tap pillar joined by a bridge situated, in use, above a mounting surface,

a diverter valve in the bridge and having outlets in fluid communication with a tap nozzle mounted on the bridge and with a hand spray;

wherein a part of a passage providing fluid communication between the diverter valve and the hand spray is situated within one of said tap pillars.

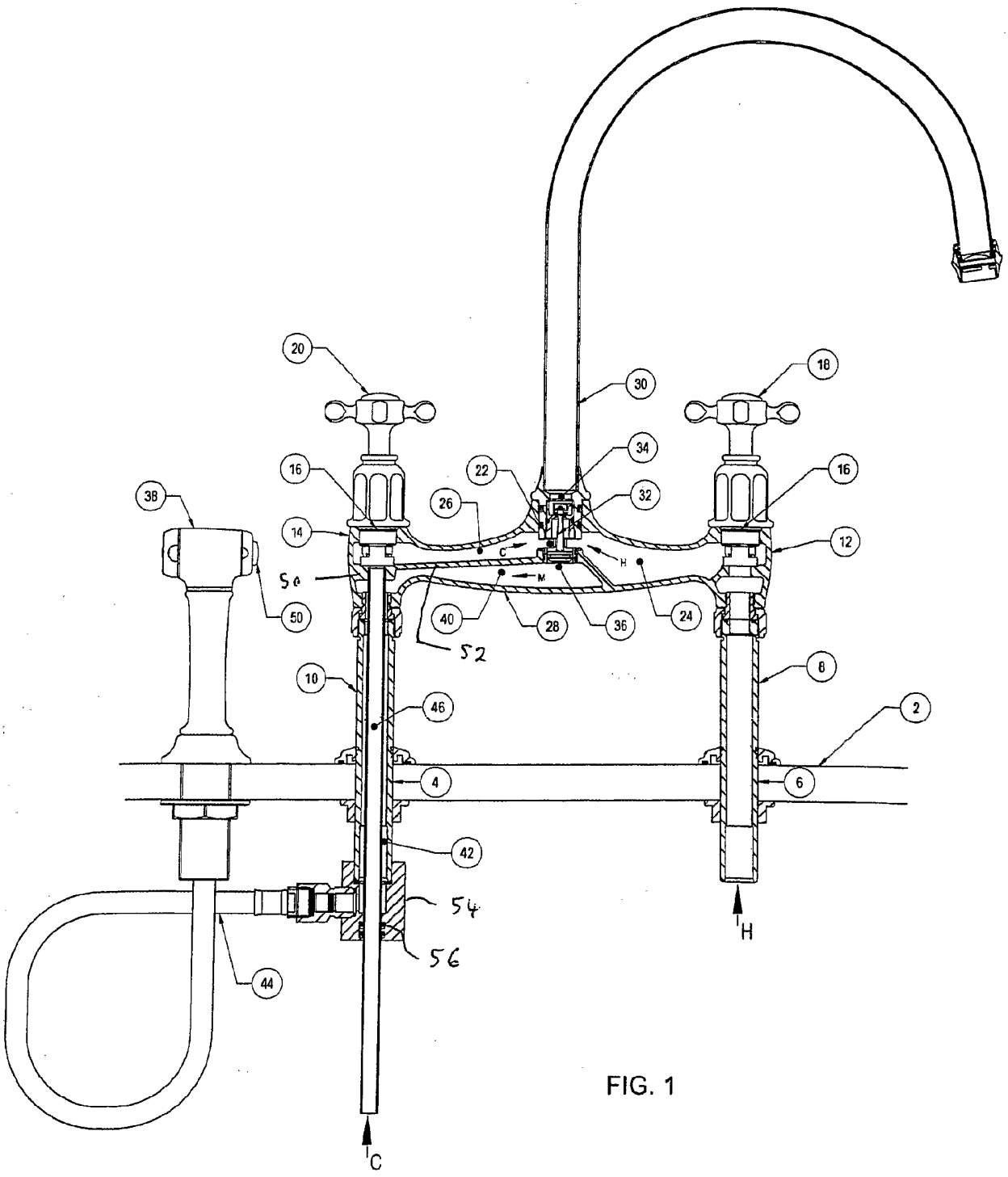

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FIG. 1

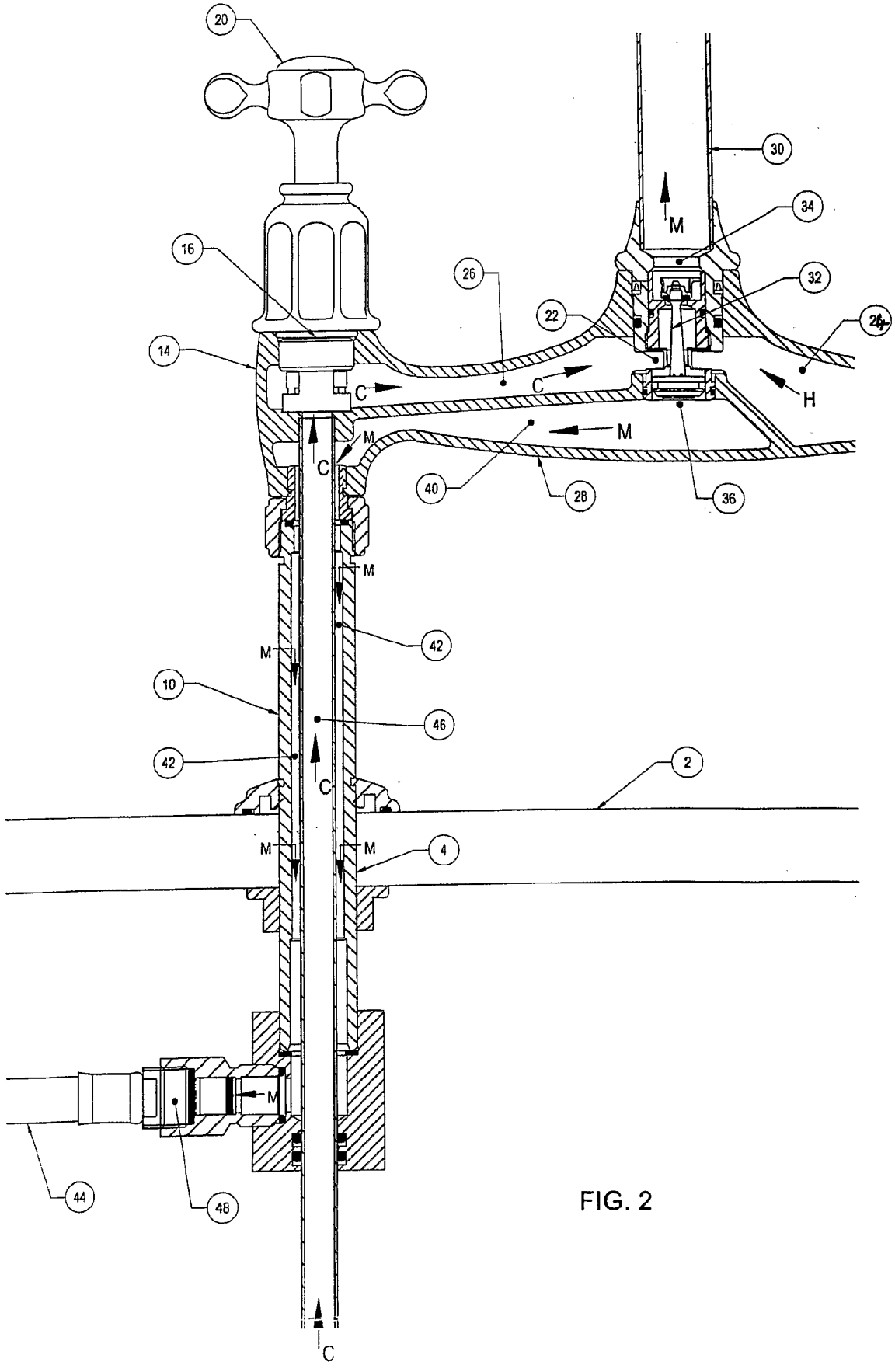

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FIG. 2

INTERNATIONAL SEARCH REPORT

PCT/GB 03/04478

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E03C1/04

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)
IPC 7 E03C

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 practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 361 047 A (BARBER WILSONS & COMPANY LTD) 10 October 2001 (2001-10-10) cited in the application the whole document	1-4
A	US 5 025 825 A (GAYTON DAVID E) 25 June 1991 (1991-06-25) column 1, line 46 -column 3, line 12; figure	1-4
A	US 5 257 824 A (EGGEN HARALD I) 2 November 1993 (1993-11-02) abstract; figures 1-3	1,2,4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 January 2004	22/01/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	De Coene, P

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INTERNATIONAL SEARCH REPORT

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2361047 A	10-10-2001	US 6341617 B1	29-01-2002
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