United States Patent

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[54] **PLUMBING SYSTEM**
10 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **137/1,** 137/357, 4/211
[51] **Int. Cl.** **F17d 1/08,** E03d 9/04
[50] **Field of Search** 4/2, 211; 137/1, 357, 360

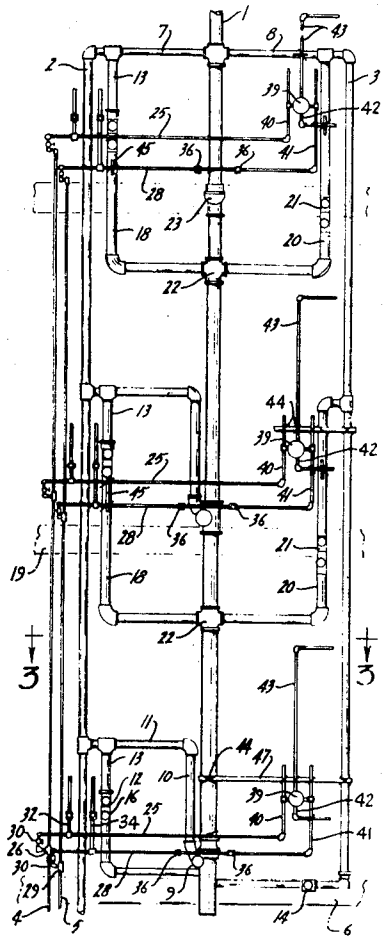
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ABSTRACT: Roughing in of the plumbing in residential and commercial buildings and other structures is accomplished by utilizing factory preassembled units incorporating both water supply and drainage piping complete for one or multiple floors and installing the units generally prior to the construction of the wall which is to contain the plumbing, and thereafter erecting the wall to fit the plumbing.

The units are assembled from pipe sections rigidly joined together and with the supply pipes tied or banded to the drain pipes at prearranged crossings to provide the plumbing for a plurality of service rooms disposed adjacent to one another or one above another as may be desired, and to provide a generally rigid portable unit suitable for transfer from the factory to the construction site.



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SHEET 1 OF 2

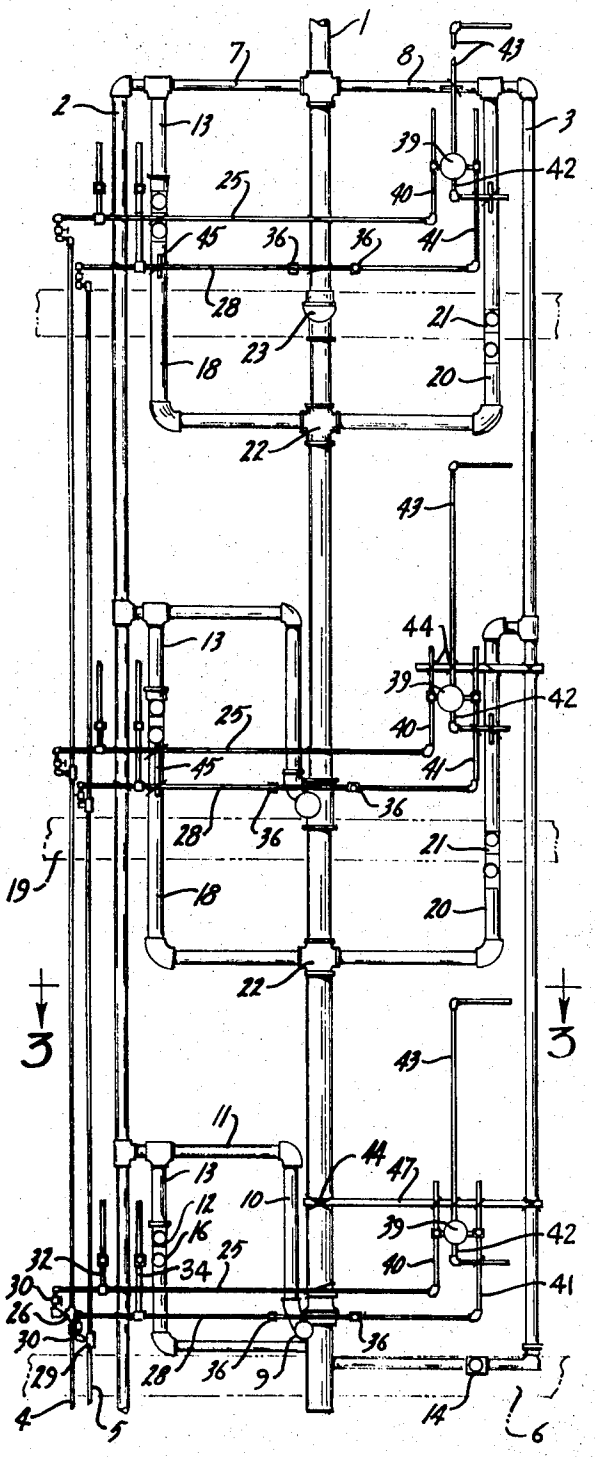


FIG_1

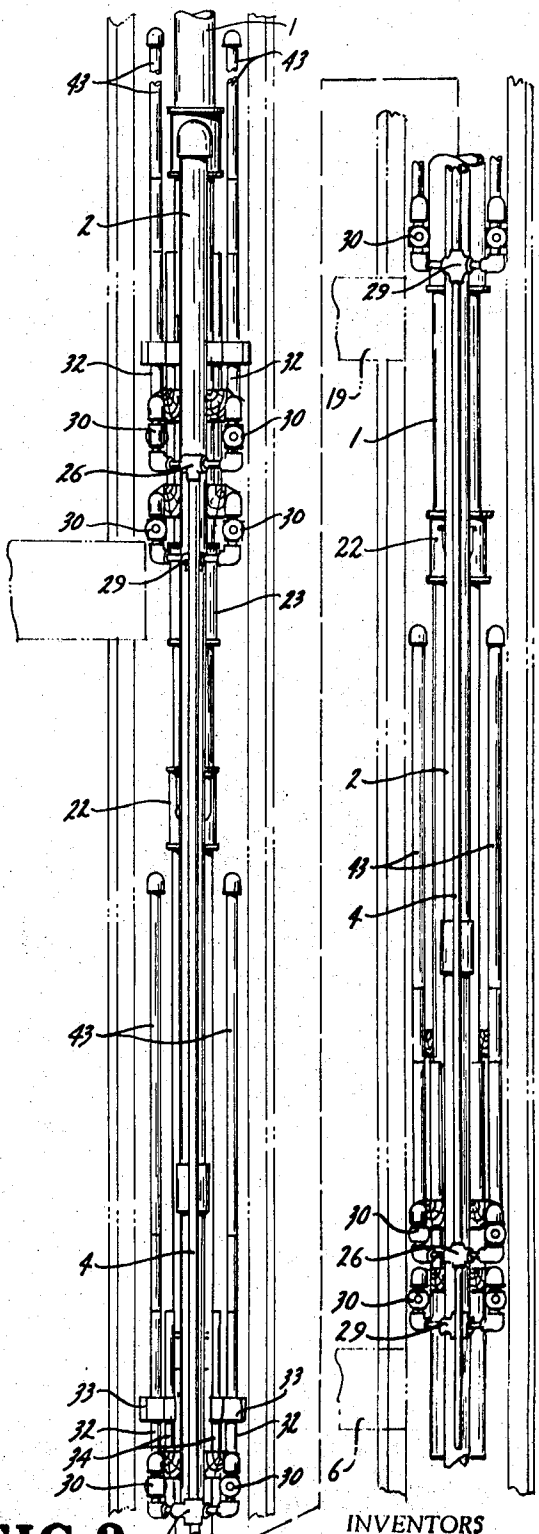
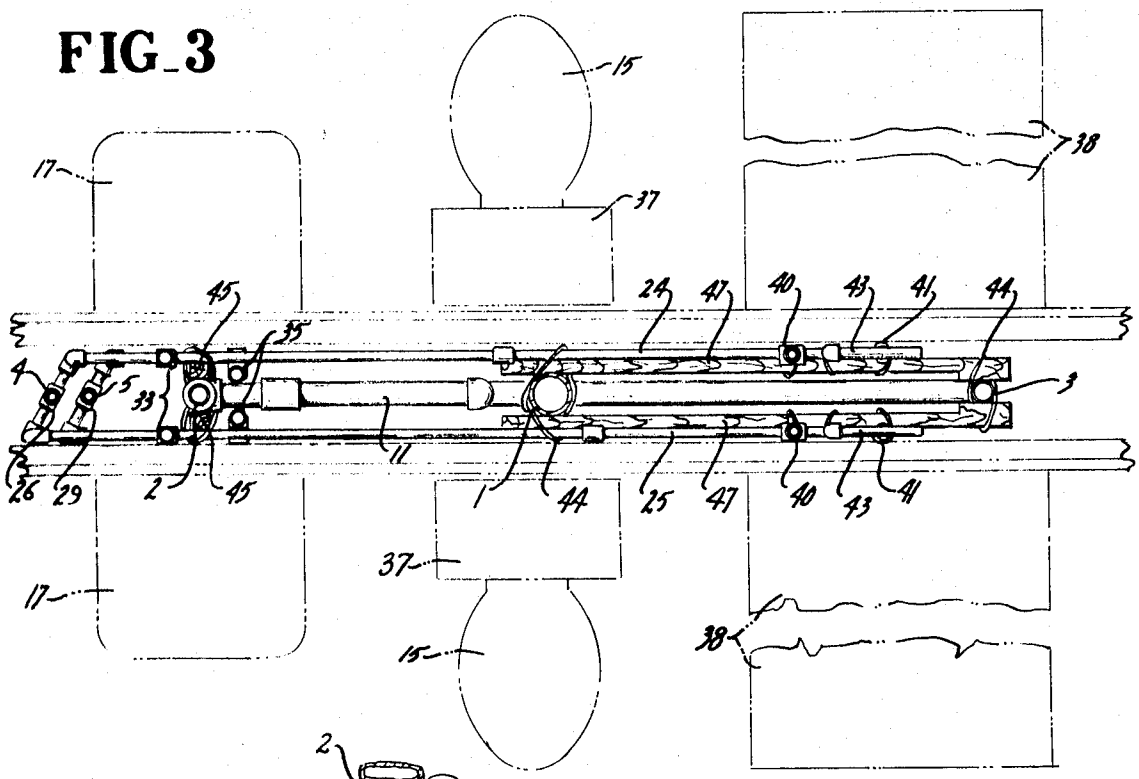


FIG_2

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FIG_3



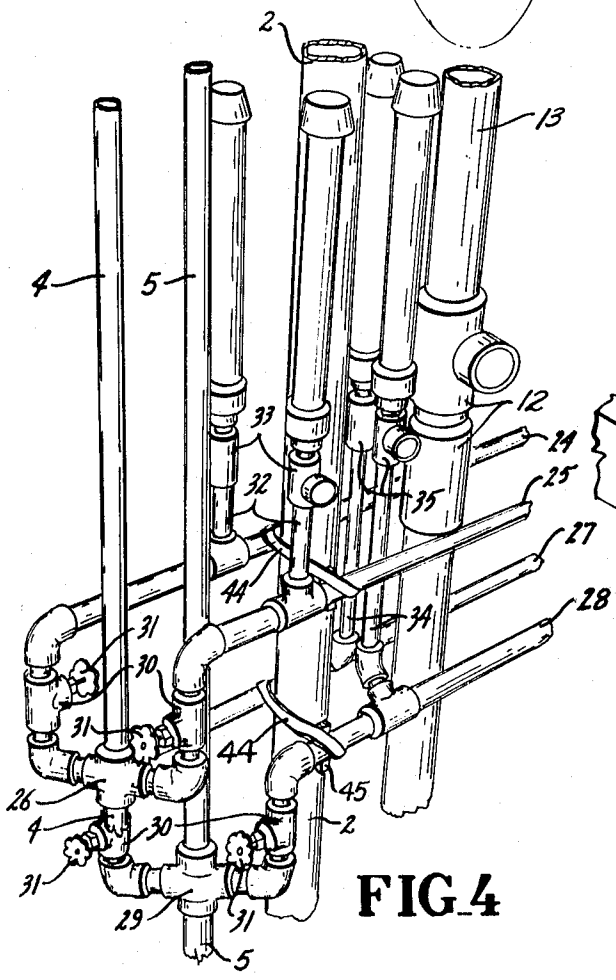
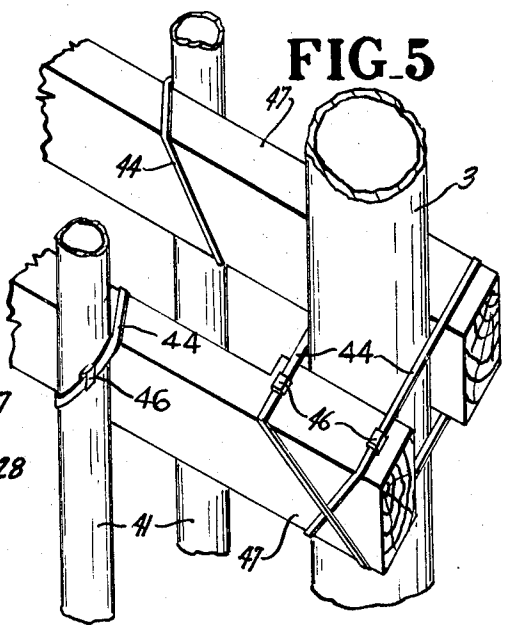


FIG_4

FIG_5



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PLUMBING SYSTEM

BACKGROUND OF THE INVENTION

This invention relates to a plumbing system adapted to be incorporated in the walls of a building or other structure.

In a broader sense it relates to a method or system of building wherein factory preassembled units of plumbing complete for several bathrooms, kitchens or other rooms are installed at the construction site prior to or during the erection of the walls which would normally contain the plumbing, and thereafter the walls are erected around the plumbing.

The method or system displaces ordinary construction methods wherein the walls are first erected, the plumbing is roughed in piece by piece by cutting away parts of the studding and other wall pieces, thus weakening the building structure and often requiring a patching of elements thereof after the plumbing has been roughed in.

Such prior methods of construction have become very costly in requiring highly skilled labor and often involving loss of necessary parts which had to be supplied anew.

The present invention in its initial installations has shown a great saving in overall labor costs for roughing in the plumbing, and has provided a noticeably better wall structure for the building.

The invention is to be distinguished from prior attempts to provide whole unitary individual bathrooms and kitchens having finished walls and floors with all fixtures and lighting in place. Such overall package installations have generally limited architectural freedom, and also preempt choice of equipment, and have nothing to do with ordinary building constructions wherein a great need for cost reduction arises.

SUMMARY OF THE INVENTION

According to the invention those portions of the plumbing of a building or other structure which are to be contained in the wall are preassembled permanently as a unit at a factory or other site, then transported to the erection site and mounted in place prior to or during construction of the wall, and the wall structure is then erected with the plumbing already roughed in.

In carrying out the invention the preassembly involves the arranging of the hot and cold water supply pipes and the drain pipes side-by-side and tied together where they cross to provide rigidity for the unit, a characteristic needed for both handling and mounting of it. Appropriate insulation is provided for the pipes where needed.

Each unit provides the roughed in plumbing for a plurality of adjacent rooms and/or for corresponding rooms on more than one floor. The height of a unit is only limited by transportation and erection facilities where multifloor buildings are under construction.

BRIEF DESCRIPTION OF THE DRAWING

The accompanying drawing illustrates the best mode presently contemplated for carrying out the invention as described herein.

In the drawings:

FIG. 1 is an elevational view of a preassembled unit extending for three floors and adapted to provide the roughed in plumbing for two adjacent bathrooms on each floor, and showing the floors in phantom;

FIG. 2 is an enlarged elevational view taken at right angles to FIG. 1, and showing the wall and floors in phantom;

FIG. 3 is an enlarged schematic plan view illustrating the installation of the unit of FIG. 1 with the proposed wall and bathroom structures shown in phantom;

FIG. 4 is an enlarged detail perspective of the lower left-hand corner of FIG. 1; and

FIG. 5 is an enlarged detail perspective view showing a typical tying or banding of the unit.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The drawings illustrate a unit adapted for a specific installation in a three story apartment building to provide the plumbing for two adjacent bathrooms on each floor. The number of units required for any building will depend upon the number of bathrooms or kitchens and the like and their location and also upon whether additional floors make it necessary to superimpose units one above another. For a one floor dwelling the unit would, of course, extend upwardly only sufficient for that floor.

The unit is installed by supporting the same vertically at the first floor deck level with the basic pipes extending down through the deck to the basement where the necessary connections are made thereto. Successive units may be mounted upon one another to accommodate buildings having many floors.

Referring to the drawings, the unit illustrated comprises a central vertical drain and vent pipe 1, vertical side vent pipes 2 and 3, a vertical hot water supply pipe 4 and a vertical cold water supply pipe 5.

The central drain and vent pipe 1 is adapted to extend downwardly through the first floor deck 6 of the building for connection with the customary drain, not shown. Pipe 1 is also adapted to extend upwardly through the roof (not shown) of the building to serve as a vent for the system.

The side vent pipes 2 and 3 are connected at their upper ends by lateral pipes 7 and 8, respectively, to the central pipe 1.

The first floor drain connections comprise a water closet drain opening 9 leading to pipe 1 and having a vertical vent pipe 10 with a lateral 11 leading to vent pipe 2, a washbasin drain 12 connected with pipe 1 and having a vertical vent pipe 13 leading to lateral 11, and with a bath tub drain 14 connected with pipe 1 and also with the lower end of vent pipe 3. The openings 9 face on opposite sides of the unit to accommodate separate wall outlet water closets 15 illustrated in phantom in FIG. 3. The drain 12 has two openings 16 on opposite sides of the unit to connect respectively with the separate wall-mounted washbasins 17 as shown in FIG. 3. The drain 14 is shown for a raised outlet tub.

The second-floor drain connections are substantially the same except that the wash basin drain 18 extends downwardly substantially below the deck 19 of the second floor level for connecting to pipe 1. Also a vertical drain pipe 20 extends downwardly from regular tub drains 21 and connects with the pipe 1 at joint 22 where drain 18 connects therewith. Pipe 20 extends upwardly as a vent and connects with vent pipe 3 substantially above the level of the tub.

The third floor drain connections are similar to those of the previous floors except that the vertical vent pipe 13 for the washbasins connect with lateral 7 and the vertical vent pipe 20 for the tub connects with lateral 8. Also the water closet is of a type for a floor mounted outlet 23 shown as a bend connecting with pipe 1.

Various drain and vent pipe designs may be employed as may be needed for compliance with the construction codes in various localities, and where permitted, the drain pipe system may be simplified.

The water supply system for each floor is substantially the same and comprises hot water laterals 24 and 25 disposed on opposite sides of the structure and connected at 26 to supply pipe 4, and cold water laterals 27 and 28 disposed on opposite sides of the structure and connected at 29 to supply pipe 5.

Each of the laterals 24, 25, 27 and 28 extends generally across the unit and each has the usual shut off manually operable valve 30 disposed so that the handle 31 thereof is available for closing of the valve when it is desired to repair the plumbing or fixtures. For this purpose the valve handles 31 may extend freely through the building wall or the wall may be recessed to accommodate the valves 30 and handles 31 and may have the recess removably covered as desired.

The laterals 24 and 27 supply water to the bathroom on the far side of the wall as illustrated in the drawings and laterals 25 and 28 supply water to the bathroom on the near side of the wall.

For this purpose each of the hot water laterals 24 and 25 has a vertical stand pipe 32 closed at its upper end and with a T coupling 33 providing for a branch line extending through the adjacent wall at a location for connecting to the hot water faucet for the corresponding washbasin 17. Likewise each of the cold water laterals 27 and 28 has a vertical standpipe 34 closed at its upper end and with a T nipple 35 providing for a branch line extending through the adjacent wall at a location for connecting to the cold water faucet for the corresponding wash basin 17.

Each of the cold water laterals 27 and 28 has a branch line connected thereto at the T coupling 36 for supplying water to the toilet flush tank 37 for the corresponding toilet 15.

The bath tubs 38 illustrated in phantom in FIG. 3 are supplied with water from the corresponding laterals 24–27, and 25–28. For this purpose a mixing valve 39 is provided on each side of the structure and is connected to the corresponding pair of laterals 24–27 and 25–28 by suitable hot water lines 40 and cold water lines 41.

Each mixing valve 39 has two outlets, one outlet pipe 42 leads downwardly to a connection for the usual tub spout, not shown, and the other outlet pipe 43 leads upwardly to a connection for the usual shower head, not shown.

The outer ends of pipes 42 and 43 may extend laterally and be subject to turning to a direction generally normal to the plane of the structure after installation and prior to the construction of the enclosing walls.

Various changes in design for the water supply pipes for the unit may be made depending upon the bathroom or kitchen design. Again various local building codes may require changes in the system.

In preassembling the unit described above, the piping employed preferably is of a type having connections that provide for maximum rigidity.

The water supply piping system is tied or banded to the drain and vent piping system so that the two systems together become a rigid unit for handling, transporting and erecting in one piece.

For this purpose, wherever one of the water supply pipes cross each other in close proximity or cross a drain or vent pipe the two are tied rigidly together by a band 44. Where the drain or vent pipes 2, 10, 12 and 20 are smaller in diameter than pipe 1, spacer blocks 45 are employed between them and the adjacent portions of the water supply piping at the location of the bands 44, so that the general plane of the supply piping will be parallel to the general plane of the drain and vent piping.

The bands 44 may be of various commercial types and may preferably be either a wire tie or a metal or plastic band secured as by a form of interlocking clasp 46.

For the lines 40 and 41 and pipes 42 and 43 a suitable brace 47 in the form of a lateral strip may extend from pipe 1 across to vent pipe 3 as indicated in the detail of FIGS. 1 and 4.

The invention provides a unitized system for roughing in the plumbing for building structures requiring plumbing, including fixed and mobile structures and also boats and ships. It provides a whole new procedure for roughing in the plumbing, one which saves a very large part of the labor cost.

In essence the system provides for fabrication of the unit in a plumbing shop, transportation to the site, erection on the deck, and thereafter for the construction of the walls around it. Following this the fixtures will be installed and connected to the unit.

Where the term "building" or "building structure" is employed herein, it is deemed to include all structures adapted to have plumbing incorporated therein.

The method provided is basic to the invention. However, various embodiments of the unitized structure may be employed depending upon the architectural design of the building or other structure being erected and upon the requirements of building codes.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

We claim:

1. The method of roughing in the plumbing for building structures comprising preassembling the basic plumbing components of the drain system and the water supply system in a unit adapted to fit into a wall of the structure, tying together the components in regions where the systems cross one another to provide a rigid unit, and thereafter positioning the unit in the wall space of the building structure.

2. The method of claim 1 wherein the unit is adapted to provide plumbing for facilities in one or more rooms on at least one floor, and the unit is positioned with respect to the floor or floors to be served by it.

3. The method of claim 2 wherein the unit extends upwardly for at least two floors.

4. The method of claim 3 wherein additional generally like units are positioned one above another and thereafter connected to provide a complete plumbing system for a structure having many floors.

5. A roughing in plumbing unit for employment in the method of claim 1 and comprising a preassembly of a drain and vent piping system and of a hot and cold water supply piping system with connecting components for plumbing fixtures, and means securing the parts together in a general plane in regions where the systems cross one another to provide a rigid assembly adapted for incorporation as a separate unit in a wall of a building structure.

6. The unit of claim 5 in which spacer blocks are provided at the points of securement where necessary to retain the two systems generally parallel.

7. The unit of claim 5 in which the two piping systems are adapted to provide the plumbing for facilities located at more than one floor of the building structure.

8. The unit of claim 5 having connections for assembly of a plurality of successive units one above the other.

9. A roughing in plumbing unit comprising a drain piping system and a water supply piping system adapted to be incorporated in a wall structure, said systems being preassembled and tied together in regions where the systems cross one another to provide a unitized rigid assembly adapted for transporting and installation at the erection site for incorporation in a wall structure.

10. The unit of claim 9 wherein a single unit provides the complete roughing in plumbing for at least two adjacent rooms disposed on each of at least two floors of a building structure.

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