Jan. 3, 1933. M. I. MIX ET AL 1,892,775

FLUID CONTROL DEVICE

Filed July 8, 1929

Fig. 1.

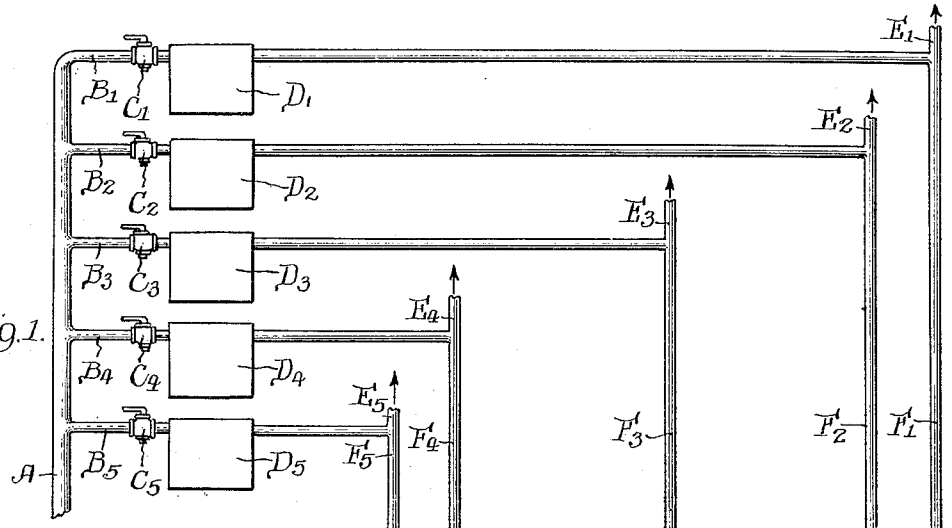
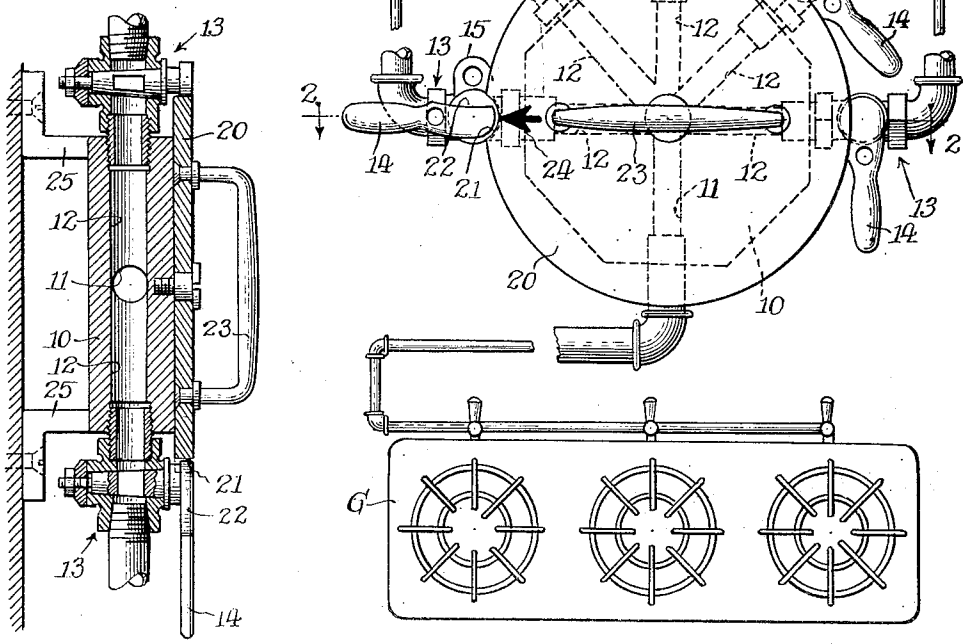


Fig. 2.



Inventors:
Martin I. Mix,
Hiram E. Heil,
By Churchill Parker & Carlson Attys.

Patented Jan. 3, 1933

1,892,775

UNITED STATES PATENT OFFICE

MARTIN I. MIX AND HIRAM E. HEIL, OF CHICAGO, ILLINOIS

FLUID CONTROL DEVICE

Application filed July 8, 1929. Serial No. 376,762.

Our invention relates generally to a fluid control device and more particularly to a fluid control device for a gas laundry stove in an apartment building, which stove is for the use of all of the tenants in the building and which may draw gas from any one of the individual tenant gas lines.

In the present system of piping in an apartment building, each apartment is supplied by a line leading from the main in which there is a meter cock and a meter, controlling and registering the amount of gas used by each tenant. From each one of these tenant lines, a branch line provided with a lock valve leads to a common header for the laundry stove so that each tenant may use the stove but use only his own gas.

By such a system is subject to abuse should any tenant fail to lock the valve in his branch line. When such failure occurs, it is possible for one of the other tenants by manipulating the control valves in a manner hereinafter set forth to use gas flowing through the meter of the first tenant not only for his use in the laundry stove but also in his apartment. Also, there is an element of danger in the present system, if, in a vacant apartment, the gas pipe is uncapped and the lock valve in the branch line for that apartment to the laundry stove is left unlocked and open; for, under these conditions, when another tenant opens his lock valve in order to use the laundry stove, gas may pass into the vacant apartment.

The general object of this invention is to provide a fluid control device connected to a plurality of lines supplying a gas laundry stove, or the like, and permitting only one of said lines to supply gas to the stove at a time, the other lines being automatically locked when the one line is placed in operable condition.

Another object of the invention is to provide a device having an outlet passage, a plurality of inlet passages communicating with the outlet passage, individually locked valves in each of said inlet passages, and means permitting only one of said valves to be opened at a time.

Other objects and advantages will become apparent from the following description taken in connection with the accompanying drawing, in which:

Figure 1 is a side elevation of a fluid control device embodying the features of the present invention with the system of piping shown diagrammatically.

Figure 2 is a section of the device taken along the line 2—2 of Figure 1.

While the invention is susceptible of various modifications and alternative constructions, we have shown in the drawing and will herein describe in detail the preferred embodiment, but it is to be understood that we do not thereby intend to limit the invention to the specific form disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

In Fig. 1, there is illustrated diagrammatically the system of piping to be used in connection with the present device, which, for convenience, will be called the new system while the system previously used will be called the old system.

In both systems, from a main A delivering gas into the building, lines B1, B2, B3, B4 and B5 branch off to supply the various apartments individually. In each of these lines are placed meter cocks C1, C2, C3, C4 and C5 and meters D1, D2, D3, D4 and D5 registering the amount of gas used in each apartment. From the meters, branch lines, E1, E2, E3, E4 and E5 lead one to each apartment as indicated by the arrows, and they also have leads F1, F2, F3, F4 and F5 running to the laundry to supply a laundry stove G. This much of the piping is common to both systems.

In the old system, individually locked valves were placed in the leads F1, F2, F3, F4 and F5, so that each tenant could prevent any unauthorized use of his gas. Below these valves, the leads joined into a common header leading directly to the laundry stove G.

But this system was subject to abuse and might cause a dangerous condition to exist if any of the individually locked valves were left unlocked. For example, assume that the

valve in the lead F2 were left unlocked. In such event, an unscrupulous tenant in an apartment connected with the line E3 could open the valves in both the leads F2 and F3 and thereby permit access from the lead F2 to the lead F3 through the header. Then, by restricting the flow of gas through the meter D3 by wholly or partially closing the meter cock C3, the tenant could then draw gas into his apartment connected with the line E3 through the meter D2, the path from the meter D2 being through the lead F2, the valve F2, the header, the valve in the lead F3, the lead F3 and thence to the apartment connected with the line E3. In case of a partial restriction of the meter cock, this abuse could go on indefinitely without detection.

The dangerous condition occurs when, in a vacant apartment, an outlet is left uncapped as when the kitchen stove is removed. To illustrate, assume that, in a vacant apartment connected with the line E4, there is an uncapped pipe and that the valve in the lead F4 was accidentally opened, the meter cock C4 being closed. Then assume that the tenant in apartment connected with the line E5 attempts to use the laundry stove G. He opens the valve in the lead F5 to permit gas to flow to the stove, but, in so doing, the gas can also flow through the header, the valve in the lead F4, the lead F4 and up into the vacant apartment connected with the line E4 through the uncapped pipe.

We obviate these evils by providing a fluid control device comprising generally a member providing passages from the branch lines to the stove, and means permitting a flow of gas through said passages to the stove from only one of the branch lines at a time.

In the present instance, a member 10 is provided with a radial outlet passage 11 connected to the gas stove G, and a plurality of radial inlet passages 12, one for each apartment, the total number of inlet passages depending upon the number of apartments for which the laundry stove G is to be used. All of the passages 11 and 12 converge toward a common center and communicate with each other.

As mentioned above, the invention includes means permitting a flow of gas to the stove from only one of the branch lines at a time. As shown in the drawing, this means comprises lock valves, generally indicated at 13, attached to the member 10 in each of the inlet passages 12 to control the flow of gas therethrough. To each of the valves 13 are connected the leads F1, F2, F3, F4 and F5 respectively. Each valve 13 is adapted to be opened and closed by a handle 14 and has a lug 15 projecting to one side of the valve with a hole in it. The handle 14 also has a hole in it which is concentric with the hole in the lug 15 when the valve is closed. To lock each valve individually key-operated means are provided such as a padlock 16. Only one padlock is shown in the drawing but it is to be understood that each valve has a padlock, the keys for which are held by the tenant in the apartment with which that line is connected. Thus, each tenant may prevent any unauthorized use of gas through his meter.

To permit only one of the lock valves 13 to be opened at a time, a circular plate 20 is rotatably mounted upon the member 10 and has a notch 21 cut in its periphery. The lock valves 13 are radially arranged about the periphery of the plate 20 and the handles 14 are arcuately cut as at 22 so as to fit snugly around the periphery of the plate 20 when the valve is in closed position, the distance from the cut edge 22 to the turning axis of the handle being less than the distance from any other point on the periphery of the handle to its turning axis. Thus, the plate 20 holds the valve 13 closed by preventing the handle 14 from being turned.

To permit any one of the valves 13 to be opened when it is so desired, the circular plate 20 is rotated until the notch 21 is opposite the valve to be opened. The handle 14 is no longer prevented from turning as the portion adjacent the cut edge 22 may turn within the notch 21 and the valve opened, as illustrated by the lower left hand valve in Figure 1. There being only one notch in the plate 20, only one of the valves may be opened at a time while all the other valves are automatically held in a closed position.

A handle 23 is attached to the plate 20 so that it may be conveniently rotated and an arrow 24 or other indicator may be etched or painted on the face of the plate 20 to indicate at a glance the position of the notch 21. If it is desired to support the device from a wall, brackets 25 or other means may be provided.

In operation, it is apparent that no two of the leads F1, F2, F3, F4 or F5 may be connected as gas from only one of them may pass to the laundry stove at a time. Thus, the evils mentioned above are entirely obviated even though one of the lock valves should accidently be left unlocked.

We claim as our invention:

1. A gas control device comprising, in combination, a member having a radial outlet passage and a plurality of radial inlet passages converging toward a common center and communicating with said outlet passage, lock valves attached to the member in each of said inlet passages and controlling the flow of gas therethrough, a circular plate rotatably attached to said member and having a notch in its periphery, and handles on said valves arcuately cut to fit snugly around the periphery of said plate, said cut edge being at a lesser distance from the turning axis of the handle than any other point on the periphery

of the handle to prevent said handle being turned when fitting around said plate, said notch in the plate permitting any one of said handles to be turned only when the notch is positioned opposite the turning axis of said handle.

2. A gas control device comprising, in combination, a member having an outlet passage and a plurality of inlet passages communicating with said outlet passage, lock valves attached to the member in each of said inlet passages controlling the flow of gas therethrough, a circular plate rotatably attached to said member and having a notch in its periphery, and handles on said valves having portions adapted to engage the periphery of said plate and to prevent said handle being turned when fitting around said plate, said notch in the plate permitting any one of said handles to be turned when the notch is positioned opposite the turning axis of said handle.

3. A gas control device comprising, in combination, a member having an outlet passage and a plurality of inlet passages communicating with said outlet passage, valves in each of said inlet passages controlling the flow of gas therethrough, a circular plate rotatably attached to said member and having a notch in its periphery, handles on said valves normally held in a closed position by said plate, said notch in the plate permitting any one of said handles to be turned when the notch is positioned opposite the turning axis of said hand'e, and a handle attached to the plate for manually rotating it.

4. A gas control device comprising, in combination, a member having an outlet passage and a plurality of inlet passages communicating with said outlet passage, lock valves in each of said inlet passages controlling the flow of gas therethrough, a circular plate rotatably attached to said member and having a notch in its periphery, and means on said valves normally cooperating with said plate to prevent said valve being opened, said notch in the p'ate permitting any one of said valves to be opened when the notch is positioned opposite said valve.

5. A fluid control device comprising, in combination, a member providing a radial outlet passage and a plurality of radial inlet passages communicating with said outlet passage, a valve in each of said inlet passages, and means rotatably mounted on said member permitting only one of said valves to be opened at a time.

6. A fluid control device comprising, in combination, a member providing an outlet passage and a plurality of inlet passages communicating with said outlet passage, a circular plate rotatably mounted on said member and having a notch in its periphery, and valves in each of said inlet passages radially arranged about the periphery of said plate and normally held in a closed position by said plate, said notch permitting any one of said valves to be opened when positioned opposite said valve.

7. A fluid control device comprising, in combination, a member providing an outlet passage and a plurality of inlet passages communicating with said outlet passage, a circular plate rotatably mounted on said member and having a notch in its periphery, valves in each of said inlet passages arranged around the periphery of said plate, and means on each of said valves abutting the periphery of said plate to prevent the valve being opened, said notch when positioned opposite said valve causing said means to be inoperable so that the valve may be opened.

8. A control device for a gas appliance to which gas may be supplied from a plurality of branch lines comprising, in combination, a member providing radially arranged passages from said branch lines to said appliance, and means carried by said member permitting a flow of gas through said passages from any one of said branch lines and automatically preventing flow of gas from all the other of said branch lines, said means including a rotatable element concentrically arranged with said passages and serving as a common control for all of said lines.

9. A fluid control device comprising, in combination, a member providing a main passage and a plurality of branch passages communicating with said main passage, radially arranged individual means for separately controlling the flow of fluid through each of said branch passages, and a plate rotatably carried by said member permitting only one of said individual means to be operated at a time.

10. In a fuel gas supply system of the charter set forth, the combination of a main supply pipe, a plurality of branch supply pipes connected with said main pipe, a header with which each of said branch pipes is connected and having a single outlet for supplying a common gas consuming appliance, and means for selectively establishing connection between any one of said branch pipes and said single outlet through said header, said means being operative to prevent connection at the same time between all other branch pipes and said outlet and including a rotary control element selectively movable into a plurality of different operative positions according to the number of branch supply pipes.

In testimony whereof we have hereunto affixed our signatures.

MARTIN I. MIX.
HIRAM E. HEIL.