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F. LAWRENCE

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CONTROLLING DEVICE FOR ALTERNATIVE FLUID SUPPLY

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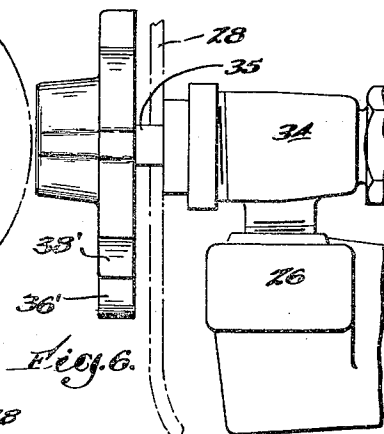
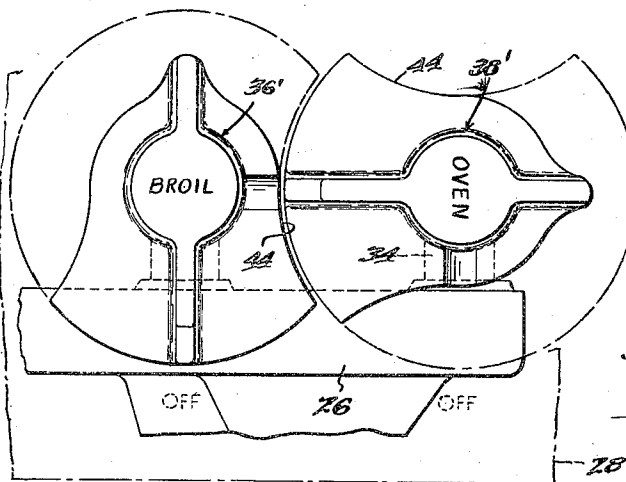
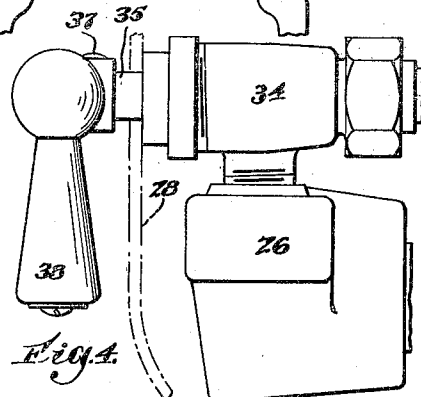
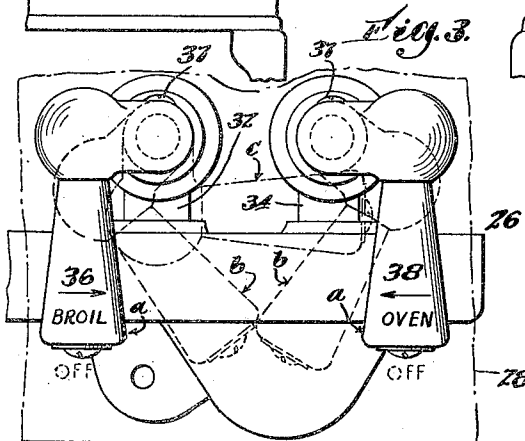
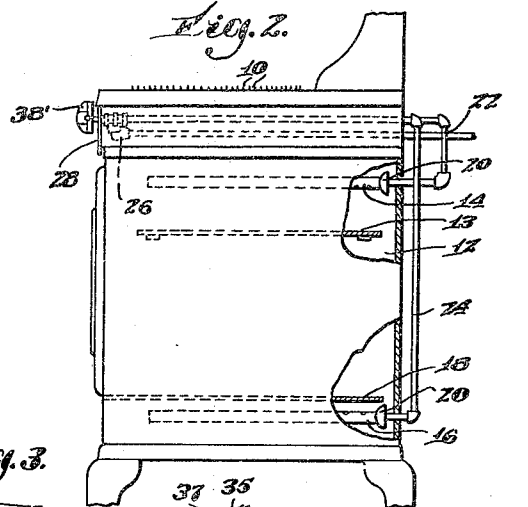
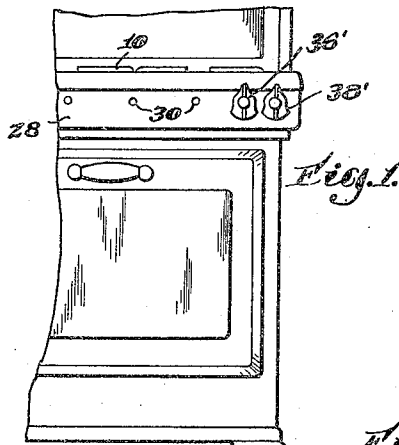


Fig. 5.

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UNITED STATES PATENT OFFICE

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CONTROLLING DEVICE FOR ALTERNATIVE FLUID SUPPLY

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This invention relates to improvements in controlling devices for alternative fluid supply.

More particularly it is herein illustrated as it may be applied in a domestic cooking range, wherein there often are two burners for different uses with a single chamber, as an oven, one for broiling and one for baking; in which case it is important, as a measure of safety, that if gas is entering the chamber through either burned it shall not be possible to open the other burner.

Hitherto, devices for this general purpose have embodied more or less complicated mechanisms involving the mounting and operating of one or more elements intermediate of the respective gas cocks, so as to provide a shiftable lock or the like that would necessarily engage one or the other of them, and would lock the one so engaged. Such mechanisms are by nature ill adapted for present day artistic and sanitary designs, as they embody unsightly parts which it is difficult to conceal from view, and which collect dirt.

The present invention provides a way to simplify the control of such plural burner gas ovens and to eliminate all operating elements intermediate of the cocks, by providing a direct co-action of cocks such that each cock, when open, locks the other cock closed. It is a part of the problem that the invention should be both infallible in action and inoffensive in design.

These ends are attained by use of inter-acting cock-handles.

The invention accomplishes the said objects and results by arranging the cocks in a suitable relation to each other, which may be at any convenient location,—for example, at the front of the range, fed by a manifold hidden behind an apron,—each cock controlling one of the said burners. The particular two gas cocks which are to be controlled by the device of the invention are set relatively close together. They may be designed so that the movement to open either is a rotary motion toward the other, or may be designed so that both are rotatable in the same direction to open. The cock-handles may be of lever-arm type, preferably with each lever

handle offset a little from the axis on which it turns; or they may be buttons with interlocking shapes. In either case, when both are closed, either can be opened without affecting the other, but when either is thus turned to an open position it obstructs the rotating of the other. Therefore one cock must be closed before the other can be opened.

It is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

In the accompanying drawing:

Figure 1 is a front elevation of a portion of a gas range equipped with my invention;

Figure 2 is a side elevation looking from the right in Figure 1, with portions broken away for clearness;

Figure 3 is an enlarged front elevation showing one design of coacting cock-control handles, both turned to "off" position of the cocks; showing in dotted lines the fully opened position of the left handle; and, in dotted lines, intermediate positions of both of the handles.

Figure 4 is a side elevation looking from the right in Figure 3;

Figure 5 is an elevation showing a preferred form of the invention, which embodies coacting buttons, the right hand cock being shown open and the other cock thereby locked; and

Figure 6 is a side elevation looking from the right in Figure 5.

Referring to the drawing, the gas range of Figures 1 and 2 has the usual or any suitable series of open burners at the top and has a combination oven-broiler compartment 12, of known type, associated with which are the two burners 14, 16 for whose control the invention is especially designed. The broiler burner 14 is at an upper location in compartment 12 and has its discharge perforations on the under side, to direct its flame downward for broiling food supported on a removable shelf 13, which may be positioned close underneath. The oven burner 16 is arranged underneath the oven floor 18; and openings around the floor 18 provide for needed circulation. Both of

these burners may be of usual or suitable shape, and each has a short stem with air regulator 20, to receive the gas supply; the broiler burner from pipe 22, and the oven burner from pipe 24.

The range burners are supplied from any suitable gas supply manifold 26 (Figures 3-6) which is concealed in Figures 1 and 2 behind an apron 28. The gas cocks controlling the burners stand above the manifold, and have stems 35 sticking through the apron 28 and carrying suitable handles which are made fast on the stems 35, as by screws 37. In Figure 1 the locations of operating stems for cocks controlling the open burners 10 are indicated by the apron openings seen at 30, beside which are the cocks 32, 34, more particularly described below; and in Figures 3-6 the position of the apron 28 is indicated in dot and dash lines.

The invention relates more particularly to safety control of the oven burners by co-action of the cocks which are set so that their handles 36, 38 interfere if either cock is open.

In the form of the invention illustrated in Figures 3 and 4, the interior of each of the cocks 32, 34 may be of a style already known wherein the valve is rotatable through 90°, from a fully closed position to a wide open position; and wherein the first 40 or 45 degrees of rotary travel of the valve, when turned in direction to open it, is lap of the valve, so that the swinging of a cock handle does not begin the actual opening of its respective valve until that handle and valve have been rotated through approximately 45° from the fully closed position of the cock.

The handles of the cocks, which may be of any suitable type, are associated together in an operative arrangement whereby each, when swung to an open position, constitutes a positive obstruction in the orbit of opening travel of the other. In Figures 3 and 4 the cock handles are of depending lever arm type, indicated respectively at 36, 38. Each lever arm is off-set a little from a strictly radial position, and the valves are constructed reversely, with respect to each other, so that each one opens by rotation of its valve in direction opposite to that in which the other moves to open; cock 32 counterclockwise, and cock 34 clockwise, the orbits of the two handles intersecting.

With these cocks set at a suitable space apart, and both of them being closed, either handle 36, 38 may be moved through its orbit from its closed position *a* to its open position without affecting the other handle; and, when thus open, as is the handle 36 at *c*, it will stand in the way of an opening movement of the other handle. But when a handle has moved far enough through its orbit for its valve to be open, regardless of whether the cock is only partially open as

at *b*, or is fully open, its handle obstructs and prevents every movement of the other handle which would be sufficient to open the valve of that other handle. One handle thus acts as a check to the other, with the result that at no one time can gas be let to pass through a cock if gas is then passing through the other cock.

Another illustration of the invention showing a type of cock which some may prefer, is seen in Figures 1, 2, 5 and 6, where the cock-operating handles 36', 38' are in the form of turn buttons. These buttons, is of full fashioned style, may have circular bodies as indicated by dot and dash lines in Figure 5, in which case they will be set so that the rotary orbit of one intersects the rotary orbit of the other. And in each body a shallow recess, where the two orbits are mutually secant, as at 44, provides for the orbit of the other body, and this permits rotation of that other body when the recess is in proper location, to wit, when the first cock is in closed position. Thus, with both buttons in fully closed positions, the recesses will stand, each in the orbit of the other cock handle, adjacent to each other; and either button may be rotated through its orbit without encountering the other. But rotation of either one to a partially open position, or to the fully open position in which button 38' is illustrated, causes the other to be positively locked against opening.

With the circular buttons, the valves of cocks 32, 34 may be identical in form, so that each opens in the same direction; or they may be reversely constructed to open in opposite directions. In either case, the buttons above described will coact to prevent both cocks being open at any one time.

The shape of buttons shown in full lines in Figure 5 is, however, preferred from the standpoint of economy and attractiveness. These buttons function the same as the circular ones except that the cocks in this case must open in opposite directions, cock 32 counterclockwise and cock 34 clockwise. The button 38', shown in wide open position, has a portion in position where it obstructs the path of swing of the button 36', and thus the latter's cock 32 never can be turned open so long as cock 34 is open. Likewise, if button 38' is in closed position and button 36' open, the latter locks the former against opening.

While the cock handles may be made of any suitable material and shape, it is convenient, economical and sanitary to make the button type of porcelain, and to mold the porcelain with a middle ridge extending across the axis of the valve, as seen in Figure 5, by which ridge the button will ordinarily be grasped by one's fingers; while the broader and underlying base portion of the button

serves as a guard between the fingers and the range.

I claim:

1. A two-pipe flow-control device comprising the combination, with two pipes, of a pair of cocks, one for each pipe, having a pair of co-acting elements, one turning with each cock, with intersecting orbits; each said element, when its own cock is open, being, by its form and location relative to the other element, an obstruction in the orbit of said other element to prevent the opening of said other cock.

2. A two-pipe flow-control device comprising the combination, with two pipes, of a pair of cocks, one for each pipe, wherein the handle of each cock, when open, by its form and location constitutes an obstruction in the opening path of the other handle.

3. In a gas range having two burners arranged so that gas from each can reach a single compartment, the combination therewith of a supply cock for each burner, said cocks being organized close together with their several paths, when opening, passing through a common region whereby either, when in said region, positively prevents the opening movement of the other cock.

4. In a gas range having two burners arranged so that gas from each can reach a single compartment, the combination therewith of a supply cock for each burner, said cocks severally opening by rotation in opposite directions and being organized close together with their several paths when opening passing through a common region whereby each, when in said region, positively prevents the opening movement of the other cock.

5. A safety control device for two burners, comprising separate cocks, one for supplying each burner, arranged close together and having control buttons; said buttons having non-round bases with intersecting orbits and being positioned so that a non-round portion of one, when that one is in closed position, permits the other to move through its own orbit; but when the former is open a portion of its base, standing in the orbit of said other, prevents the opening of said other.

6. A two-pipe flow-control device comprising the combination, with two pipes, of a pair of cocks, one for each pipe; and a pair of buttons, one for each cock; said buttons mutually having circular portions of base, each toward the other when its own cock is open, and each having a recessed portion toward the other when its own cock is closed; said base portion of each button moving into said recessed portion of the other button when its own cock is being opened and said other's cock is closed.

7. A two-pipe flow-control device comprising the combination, with two pipes, of a pair of cocks, one for each pipe; and a

pair of buttons, one for each cock; said cocks being designed to open each by rotation in the same direction, and said buttons having circular peripheries whose orbits are secant; each said periphery having a recess which in one position, permits the circular periphery of the other to pass it.

8. A two-pipe flow-control device comprising the combination, with two pipes, of a pair of cocks, one for each pipe; and a pair of coacting handles, one for each cock; each said handle being of the lever arm type, and each lever arm being offset from the axis of its cock in direction away from the other handle when both are in the closed positions of their cocks; and both handles being so located, each in relation to the other, that when both are in said off positions each is free to move to open its cock and, where thus moved, obstructs the path of the other handle; whereby at any one time only one cock can be open.

Signed at Portland, Maine, this fourth day of June, 1931.

FRANKLIN LAWRENCE.