

July 17, 1928.

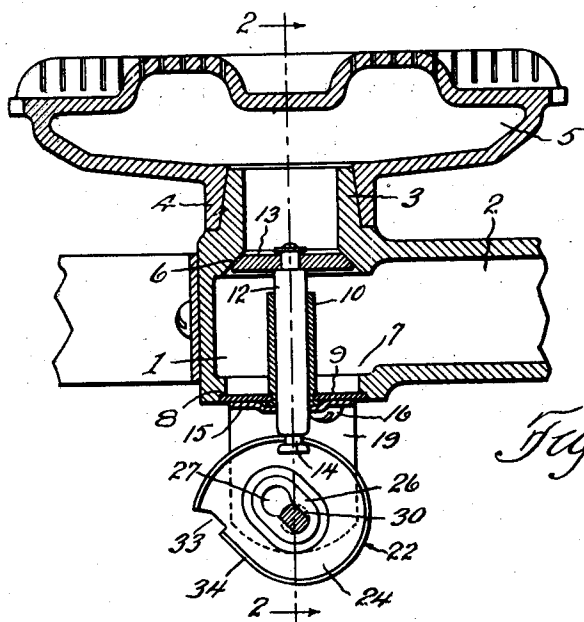
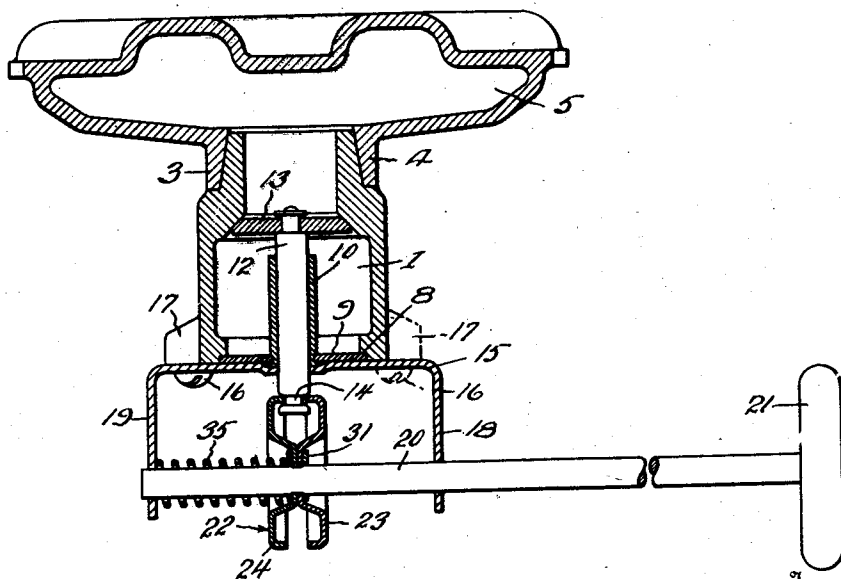
1,677,598

M. RESEK

VALVE

Filed Jan. 21, 1927

2 Sheets-Sheet 1



Inventor

Marc Resek

364 Hull, Brock & West
Attorneys

July 17, 1928.

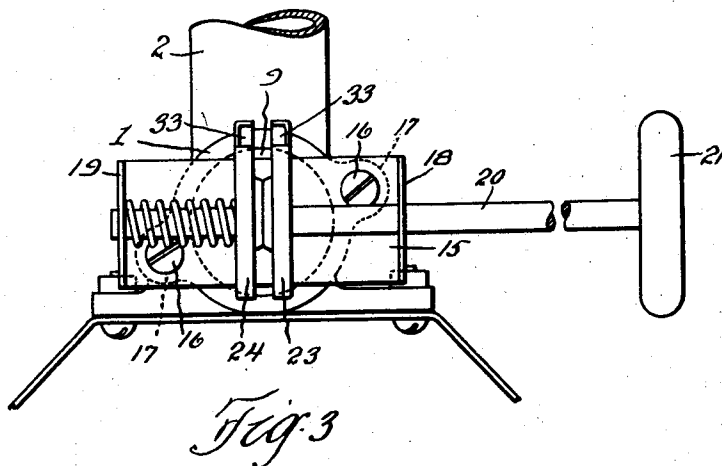
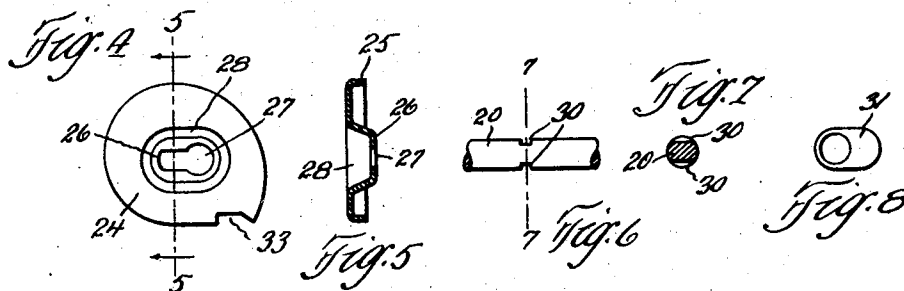
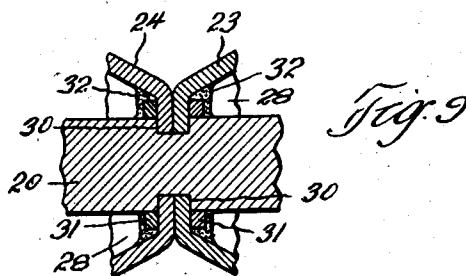
1,677,598

M. RESEK

VALVE

Filed Jan. 21, 1927

2 Sheets-Sheet 2



Inventor
Marc Resek

My Hull, Brock & West
Attorneys

Patented July 17, 1928.

1,677,598

UNITED STATES PATENT OFFICE.

MARC RESEK, OF CLEVELAND HEIGHTS, OHIO, ASSIGNOR TO PERFECTION STOVE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

VALVE.

Application filed January 21, 1927. Serial No. 162,529.

This invention relates to an improved valve that is especially suitable for use in liquid fuel stoves of the retort class for controlling the supply of gaseous fuel to the auxiliary burners.

In purpose, and in some structural respects, the present valve is the same as that disclosed in an application filed jointly by John Alger Dahlstrom and myself on December 3, 1926, Serial No. 152,355.

Certain objects of my present invention are to simplify, cheapen, and render more substantial and durable the valve operating mechanism, and to so construct it as to facilitate production and assembly of the parts, and expedite manufacture.

Further objects are to provide a valve of the class at hand that is especially easy of operation; that may be very accurately adjusted, and that will effectually maintain its adjustment against reasonable accidental forces tending to disturb it, such as jars or vibration.

Another object is to design the valve operating mechanism so that metal stampings may be employed almost exclusively in its production, and so that the parts of the mechanism will interfit and thereby maintain their assembled condition and operative connections with the use of a minimum number of fastening means.

The foregoing objects are attained in the embodiment of the invention illustrated in the accompanying drawings wherein Fig. 1 is a central vertical section through the valve and through a burner associated with it; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a bottom plan view; Fig. 4 is an outside face view of one of the cam sections; Fig. 5 is a section on the line 5—5 of Fig. 4; Fig. 6 is a fragmentary side elevation of the valve operating spindle; Fig. 7 is a section on the line 7—7 of Fig. 6; Fig. 8 is a side elevation of one of the locking plates used in the connection between the cam and spindle; and Fig. 9 is an enlarged sectional detail of such connection.

Describing the parts by reference characters, 1 is the valve casing which, in the present instance, is cast integral with a manifold 2, and rising from the casing is a hollow boss 3 to which is fitted the neck 4 of a burner 5. Surrounding the inner end of the bore of the boss 3 is a tapered valve seat 6, and the wall of the casing opposite

said seat is provided with an opening 7 that is counterbored to provide a shoulder 8.

Fitting within the counterbore of the opening 7 and against the shoulder 8 is a disk 9 from the center of which rises a tubular guide 10. The guide is shown as secured to the disk 9 by projecting its reduced lower end through a hole in the disk and then peening over or upsetting said end. Slidable within the guide 10 is a valve stem 12 which carries, preferably loosely, at its upper end a valve member 13 for cooperation with the seat 6. The stem 12 is provided adjacent its lower end with a circumferential groove 14.

Disposed across the bottom of the casing 1 is the base of an inverted U-shaped bracket 15, and the bracket is adapted to be secured to the casing by screws 16 that are extended through holes in the base and are threaded into ears 17 of the casing. Rotatably supported within apertures in the end branches 18 and 19 of the bracket 15 is a spindle 20 to the forward end of which is secured an operating handle 21.

A cam, designated generally by the numeral 22, is secured to the spindle 20 below the valve stem 12. This cam is shown as formed of sections 23 and 24, preferably constituted of sheet metal stampings, each being a true counterpart of the other, i. e., identical with the other excepting that one is right hand and the other is left hand. Each section is formed with a peripheral flange 25, and with a depressed hub 26, the latter being punched with a keyhole slot 27, as shown most clearly in Fig. 4. The depression of the hub forms a cavity 28 in the outer face of the section. Where the cam is located on the spindle 20, the latter is formed on its opposite sides with slots 30 that are of a width substantially equal to twice the thickness of the metal from which the cam sections 23 and 24 are formed; and the circular end of the keyhole slot 27 is approximately the same in diameter as the spindle, while the restricted end of the slot is practically as wide as the distance between the bottoms of the opposed slots 30.

In assembling the cam and spindle, the latter is extended through the enlarged ends of the slots of the cam sections while said sections are turned in proper relation to each other. With the sections pressed firmly together, the slots 30 of the spindle are

brought into register with the keyhole slots of the sections and the spindle is then shifted laterally into the restricted ends of the slots, the opposed edges of said restricted ends entering the slots 30 of the spindle. In order to hold the spindle in this position, apertured locking plates 31 are applied to the spindle on opposite sides of the cam and are moved into the cavities 28 against the hubs of the cam sections. The cavities 28 are shown as elongated, and the locking plates 31 are preferably formed to fit within the bottoms of the cavities. With the parts so assembled, deposits 32 of solder or the like (Fig. 9) are poured into the cavities about the plates 31 and serve to secure the parts permanently in place.

As shown clearly in Figs. 1 and 2, the peripheral flanges of the cam sections 23 and 24 operate within the circumferential groove 14 of the valve stem 12, and as a consequence of this, when the spindle 20 is rotated by means of the operating handle 21, the stem 12 will be reciprocated by reason of the eccentricity of the flanges 25 and thus move the valve member 13 toward and from the seat 6. To avoid binding of the flanges within the groove 14 as the flanges move obliquely through the groove, the opposed walls of said groove are chamfered or rounded, as shown.

It will be noted that at the highest point of the cam the flanges 25 are interrupted to produce a gate, designated 33. It is through this gate that the lower end of the valve stem 12 is entered when engaging the flanges 25 within the groove 14; but when the parts are assembled and the bracket 15 secured by the screws 16 to the lugs 17, the stem 12 is restrained from being lifted high enough—because of the engagement of the valve member 13 with the seat 6—to permit sufficient rotation of the cam to bring the gate 33 adjacent the valve stem. Therefore, so long as the parts are assembled, there is no danger of the cam being disengaged from the valve stem, but as soon as the bracket 15 is disconnected from the casing and permitted to drop, the disconnection between the cam and spindle may be readily made by simply turning the spindle in a clockwise direction until the flanges 25 ride out of the groove 14, whereupon the valve stem may be lifted from the guide 10. The rotation of the cam in a counter-clockwise direction beyond a certain point is prevented by the engagement of straight portions 34 of the flanges 25 within the groove 14.

The parts are designed to provide clearance ample to prevent liability of the parts sticking, and also to avoid such extreme accuracy as would make production and assembly expensive and tedious. On account of this it is desirable to provide means for creating friction between certain of the oper-

ating parts to the end that the valve will maintain its adjustment against accidental disturbance. In the present embodiment I accomplish this result by compressing a coil spring 35 between the branch 19 of the bracket 15 and the cam 22. This spring urges the spindle 20 forwardly and causes the peripheral flange of the cam section 24 to bear with considerable friction against the bottom of the groove 14 and this, in turn, produces a side thrust on the stem 12 which causes it to bind to a limited extent within the guide 10. Furthermore, this produces a rolling action between the cam flange and spindle which makes the operation of the mechanism easier and avoids wear of the parts.

It is evident from the foregoing description that the two screws 16 are responsible for holding the various elements assembled. Upon removal of these screws, the bracket may be dropped, the cam turned far enough to disengage it from the stem 12, the stem withdrawn from the guide 10, the guide with its supporting disk 9 removed from the counterbore of the opening 7, and the spindle shifted forwardly and disconnected from the branch 19 of the bracket so that the spring may be removed from the spindle.

Having thus described my invention, what I claim is:

1. In a device of the character set forth, the combination of a reciprocable element having a groove, a valve member having connection with said element, a rotatable member having a cam flange engaged within said groove, and means tending to maintain the last mentioned member and said element in frictional engagement.

2. In a device of the character set forth, the combination of a reciprocable valve member, a rotatable spindle, a cam carried by said spindle, operative connections between the cam and the valve member, and resilient friction means tending to maintain the valve member against movement in any position to which it is adjusted.

3. In a device of the character set forth, the combination of a reciprocable valve member, a rotatable spindle, a cam carried by said spindle, operative connections between the cam and the valve member, and means creating friction in said operative connections thereby to maintain the valve member against movement in any position to which it is adjusted.

4. In a device of the character set forth, the combination of a reciprocable element, a valve member having connection therewith, a spindle supported transversely of the axis of reciprocation of said element, a cam on said spindle bearing laterally against said element, the cam and element having interfitting parts effecting a driving connection between the cam and element,

friction producing means acting to maintain the reciprocating element against movement in any position to which it is adjusted, and means for rotating the spindle.

5 5. In a device of the character set forth, the combination of a reciprocable element, a valve member having connection therewith, a spindle supported transversely of the axis
10 of reciprocation of said element, a cam on said spindle bearing laterally against said element, the cam and element having inter-
fitting parts effecting a driving connection between the cam and element, means urging
15 the cam into frictional engagement with said element, and means for rotating the spindle.

6. In a device of the character set forth, the combination of a reciprocable element having a groove, a valve member having con-
20 nection with said element, a spindle supported transversely of the axis of reciprocation of the element, a member on said spindle having a cam flange engaged within
the groove of said element, means for rotating
25 the spindle, and means tending to move the last mentioned member in a direction to frictionally engage it with the element.

7. In a device of the character set forth, the combination of a reciprocable element, a
30 valve member having connection therewith, a spindle supported transversely of the axis of reciprocation of said element, a cam on said spindle comprising separate comple-
mentary opposed sections between which a
35 part of the aforesaid element reposes, each section incorporating a flange, the element having a groove within which said flanges are engaged, and means for rotating the
spindle.

8. In a device of the character set forth, the combination of a reciprocable element, a valve member having connection therewith, a spindle supported transversely of the axis
40 of reciprocation of said element, a cam on said spindle comprising opposed sections between which a part of the aforesaid element
45 reposes, each section incorporating a flange, the element having a groove within which said flanges are engaged, means urging the
cam into frictional engagement with said
50 element, and means for rotating the spindle.

9. In a device of the character set forth, the combination of a reciprocable stem, a valve member having connection therewith,
55 a spindle supported transversely of the axis of reciprocation of said stem, a cam on said spindle comprising separate complementary
opposed sections having inwardly directed peripheral flanges, the spindle having a
60 groove in which said flanges engage, and means for rotating the spindle.

10. In a device of the character set forth, the combination of a reciprocable stem, a valve member having connection therewith,
65 a spindle supported transversely of the axis

of reciprocation of said stem, a cam on said spindle comprising opposed sections having inwardly directed peripheral flanges, the spindle having a groove in which said
70 flanges engage, and means tending to urge the cam into frictional engagement with the stem.

11. In a device of the character set forth, the combination of a guide, a stem reciprocable therein and having a circumferential
75 groove beyond one end of the guide, a valve member having connection with the stem beyond the opposite end of the guide, a spindle supported transversely of the axis of
reciprocation of said stem, a cam on said
80 spindle comprising separate complementary opposed sections between which the grooved end of the stem reposes, each section incorporating a flange that is engaged within the
groove of the stem, and means for rotating
85 the spindle.

12. In a device of the character set forth, the combination of a guide, a stem reciprocable therein and having a circumferential
90 groove beyond one end of the guide, a valve member having connection with the stem beyond the opposite end of the guide, a spindle supported transversely of the axis of
reciprocation of said stem, a cam on said
95 spindle comprising opposed sections between which the grooved end of the stem reposes, each section incorporating a flange that is engaged within the groove of the stem,
means for rotating the spindle, and means
100 urging the cam into frictional engagement with the stem.

13. In a device of the character set forth, the combination of a bracket, a guide associated with said bracket, a stem reciprocable
105 within said guide, a valve member having connection with said stem, a spindle rotatably supported by the bracket transversely of the axis of reciprocation of the
stem, a cam secured to said spindle and comprising separate complementary opposed
110 sections having inwardly directed flanges, the stem having a groove for the reception of said flanges, and means for rotating the spindle.

14. In a device of the character set forth, 115 the combination of a bracket, a guide associated with said bracket, a stem reciprocable within said guide, a valve member having connection with said stem, a spindle rotatably supported by the bracket trans-
120 versely of the axis of reciprocation of the stem, a cam secured to said spindle and comprising opposed sections having inwardly directed flanges, the stem having a
groove for the reception of said flanges, a
125 spring surrounding the spindle and compressed between the cam and an opposed part of the bracket, and means for rotating the spindle.

15. In a device of the character set forth, 130

the combination of a casing having an opening, a member fitted within said opening and incorporating a tubular guide, a stem reciprocable within said guide, a valve member carried by the inner end of the stem, the stem having a circumferential groove adjacent its outer end, a bracket incorporating a base and spaced apart branches, the base being secured to the casing across the aforesaid opening thereof and having an aperture through which the valve stem projects, a spindle rotatably supported by the branches of the bracket, a member on said spindle having a cam flange engaged within the groove of the aforesaid stem, a spring surrounding the spindle and compressed between the cam and the opposed branch of the bracket for urging the cam in a direction to frictionally engage it with the stem, and means for rotating the spindle.

16. A valve adapted to be opened and closed by a reciprocating movement, a grooved stem secured to said valve, a rotatable cam operating within said groove for reciprocating the valve, and friction producing means acting to maintain the valve against movement in any adjusted position.

17. In mechanism of the character set forth, the combination of a spindle, a cam having a slot whose opposite ends are of different widths and through the enlarged end of which said spindle is adapted to be projected, the spindle being reduced transversely in one direction at a point permitting it to be projected laterally into the restricted end of said slot, and means retaining the spindle within said restricted end.

18. In mechanism of the character set forth, the combination of a spindle, a cam having a keyhole slot through the enlarged

end of which said spindle is adapted to be projected, the spindle having notches in its opposite sides permitting it to be projected laterally into the restricted end of said keyhole slot, and means retaining the spindle within said restricted end.

19. In mechanism of the character set forth, the combination of a spindle, a cam having a keyhole slot through the enlarged end of which said spindle is adapted to be projected, the spindle having notches in its opposite sides permitting it to be projected laterally into the restricted end of said keyhole slot, and a locking plate having an aperture through which the spindle is adapted to be projected, said locking plate and cam having cooperating parts for maintaining the spindle within the restricted end of the slot.

20. In mechanism of the character set forth, the combination of a spindle, a cam comprising opposed sections having hub portions that are adapted to be engaged with each other, said hub portions having registering keyhole slots, the spindle being adapted to be projected through the larger ends of said slots and having notches in its opposite sides which permit the spindle to be shifted laterally into the restricted ends of the slots, said cam sections having depressions surrounding their slots, locking plates having apertures accommodating the spindle and which fit within the depressions of the cam sections when the spindle occupies the restricted ends of the slots, and means for securing the locking plates in position.

In testimony whereof, I hereunto affix my signature.

MARC RESEK.