

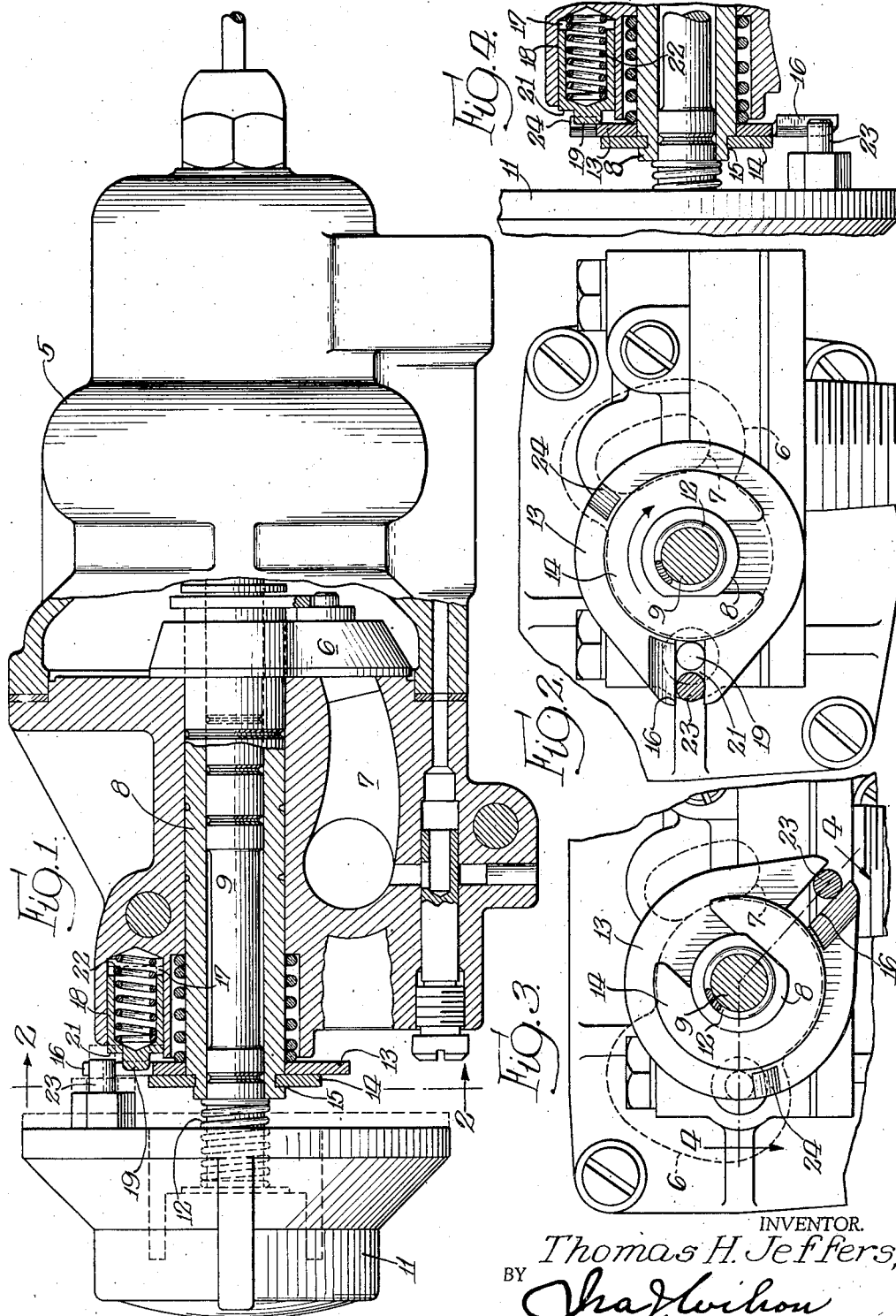
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FUEL REGULATOR LATCH

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FUEL REGULATOR LATCH

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This invention relates in general to fuel regulators by which the gaseous fuel supply to a burner may be manually controlled and thermostatically regulated so as to produce and maintain a predetermined temperature in an oven or other chamber to be heated, and is more particularly concerned with a latch by which the control valve of the regulator will be automatically locked in closed position against accidental opening.

While latches for this general purpose have heretofore been employed, they have been somewhat complex in structure, and, consequently, not only expensive to manufacture but difficult to assemble in working position.

The primary purpose of my present invention is to provide a latch of the character indicated which will not only be simple in construction, cheap to manufacture, and easy to assemble, but which will be positive and reliable in operation and durable in use.

With these ends in view, I have provided a latch of simple construction devoid of levers and other complications which comprises merely a spring pressed lock pin adapted to lockingly engage in a slot in a disk connected with the control valve actuator for automatically locking the actuator against movement, and in conjunction therewith I have provided a stud mounted on the control knob in position to engage in said disk slot for turning the disk, the stud being aligned with the locking pin when the valve is closed so that longitudinal movement of the stud directly against the lock pin will retract the pin from engagement with the disk and thereby release the valve for movement by the knob.

A preferred embodiment of my invention is illustrated on the accompanying drawing, although the invention in its broader aspect is not restricted to the specific details disclosed.

Referring to the drawing:

Fig. 1 is an elevation of a fuel regulator partially broken away to expose the latch embodying the principles of my invention;

Fig. 2 is a detail view substantially on the line 2—2 of Fig. 1 showing the position of the parts when the control valve is locked in closed position;

Fig. 3 is a similar view showing the position of the parts when the control valve has been moved to fully open position; and

Fig. 4 is a fragmentary sectional view on the line 4—4 of Fig. 3.

On the drawing, reference character 5 indicates

generally the casing of a regulator, the structural details of which, except for the latch mechanism, are immaterial so far as my present invention is concerned. The regulator illustrated, however, is fully disclosed in a co-pending application of Kenneth L. Dynes, Serial No. 252,135, filed January 21, 1939. The form of regulator illustrated comprises an oscillatable control valve 6 adapted to control a fuel passage 7, the valve being mounted to oscillate about the axis of a hollow shaft or sleeve 8 upon which it is carried. A rotatable and longitudinally movable shaft 9 is disposed within the sleeve 8 and is operably connected at its inner end with a fuel regulating valve (not shown) and by which said valve may be regulated to maintain under the influence of a thermostat that predetermined temperature in the burner heated compartment for which the regulator is set.

Upon the outer end of shaft 9 there is fixedly mounted a manually operable knob or handle 11 which is maintained in the outward position shown in full lines in Fig. 1 by an expansion spring 12 interposed between the knob and the outer end of sleeve 8. A disk 13 non-rotatably mounted upon the sleeve 8 is maintained against displacement longitudinally from the sleeve by a bifurcated lock washer 14 which is moved transversely of the sleeve into locking position in a circumferential groove 15 formed in the sleeve. The disk 13 is provided with a radially disposed slot 16, best shown in Figs. 2 and 3.

The wall of the casing 5 is provided with a recess 17 to slidably receive a hollow lock pin 18 which is formed at its outer end to provide a central locking projection 19 surrounded by a shoulder 21. A spring 22 urges the lock pin outwardly against the inner face of disk 13, and when the slot 16 is brought into alignment with the pin upon closure of the control valve, the locking projection 19 is projected into the slot, as shown in Figs. 1 and 2, so as to lock the disk 13 and thereby the control valve and the operating knob 11 against rotative movement.

For the dual purpose of imparting rotative movement from the knob 11 to the disk 13 and thereby through the sleeve 8 to the control valve 6, and for releasing the lock pin from the slot 16 to permit this movement, the rear face of the knob is equipped with a rearwardly projecting stud 23 extending through the disk slot 16 so as to form a permanent connection between the disk 13 and the knob. This stud is so radially positioned as to oppose the shoulder 21 of the lock pin when the parts are in the position shown

in Figs. 1 and 2. Consequently, when the knob is moved inwardly against the force of spring 12 from the full to the dotted line position shown in Fig. 1, the end of abutment 23 will force the lock pin 18 inwardly against the force of spring 22, thereby retracting the locking projection 19 from the slot 16 so as to release the disk for rotative movement. The disk may then be turned by the knob in a clockwise direction from the valve closed position, illustrated in Fig. 2, to the fully valve open position, illustrated in Fig. 3, or to any intermediate position. As soon as the slot 16 has been moved out of alignment with locking projection 19, pressure upon the knob may be relieved and the end of projection 19 will then rest under the influence of spring 22 against the rear face of disk 13 during rotative movements of the disk.

Movement of the disk in a clockwise direction is limited by engagement of a rearwardly struck tang 24 providing a shoulder on the rear face of disk 13 which abuts against the lock pin projection 19 when the parts have assumed the position illustrated in Fig. 3, and also in Fig. 4. Upon reverse movement of the knob and consequently the disk, the slot 16 will, when the valve 6 has been moved to fully closed position, again align with the lock pin so that the projection 19 will be automatically projected into the slot to lock the parts against rotative movement until again released by the stud 23 as the result of inward pressure against the knob 11. One edge of the slot 16 is bent rearwardly slightly, as shown in Fig. 4, to be engaged by shoulder 21 as the lock pin snaps into the slot, to thereby limit the projection of the pin.

It should be apparent from the foregoing that I have provided a latch mechanism which is positive and reliable in operation and which is simple in construction, positive in its action, economical to manufacture, and easy to assemble.

The structural details illustrated and described may obviously be varied within considerable limits without departing from the essence of my invention as defined in the following claims.

I claim:

1. A latch for a rotatable valve actuating member of a fuel regulator or the like comprising, a disk carried by said member and provided with a radially disposed slot, a lock pin mounted in position to be yieldably projected into engagement with said disk, a rotatable and axially movable control knob, and a stud projecting from said knob through said slot in alignment with a shoulder on said lock pin when the regulator valve is in closed position, whereby upon axial movement of said knob said lock pin will be disengaged from said disk to permit rotative movement of said valve actuating member.

2. A latch for the control member of a fuel

regulator, comprising a knob for actuating said member, an element rotatable with said knob and member, a locking pin positioned to engage said element, means for yieldably projecting said pin into locking engagement with said element, and a stud carried by said knob in position to disengage said pin from said element upon axial movement of said knob.

3. A latch for a rotatable valve actuating member, comprising a slotted disk mounted on said member, a lock pin, means for yieldingly urging said pin into locking relation with said disk, a knob, and a stud projecting from said knob through said disk and adapted upon axial movement of said knob to directly engage said lock pin and retract the same from engagement with said disk.

4. A latch for the control member of a fuel regulator including a casing provided at one end thereof with a recess, comprising a lock pin slidably disposed within said recess, a spring for projecting said lock pin from the recess, a rotatable member provided with a slot for the reception of said lock pin, a rotatable knob, and a stud projecting from said knob through said slot in position to retract said lock pin from said slot upon axial movement of the knob.

5. The combination with a rotatable shaft and a slotted member fixed thereon, of an operating knob, a stud extending from said knob through the slot in said member, and a yieldably mounted lock pin positioned to engage in the slot of said member and hold the member against rotation, said lock pin being disposed in the path of said stud to be thereby retracted from said slot upon axial movement of said knob.

6. The combination with an operating shaft provided with a radially slotted disk, of a yieldably mounted lock pin for automatically locking said disk against rotation when the slot in said disk is aligned with said pin, an operating knob, and a stud projecting from said knob in abutting relation to said pin whereby the pin is retracted from said slot upon axial movement of the knob and whereby said disk may be rotated when released by said pin.

7. A latching mechanism for a fuel regulator having a rotatable valve operating member, which comprises a slotted element fixed on said member, a stationarily mounted spring pressed locking pin engagable with said element to lock said member against rotation, and a rotatable and axially movable operating member provided with a stud engaged with said element and aligned with said pin for disengaging the pin from said element upon axial movement of said operating member.

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