N. C. LOCKE.

AUTOMATIC VALVE CONTROLLER.

APPLICATION FILED OCT. 15, 1907.

924,680.

Patented June 15, 1909.

2 SHEETS—SHEET 1.

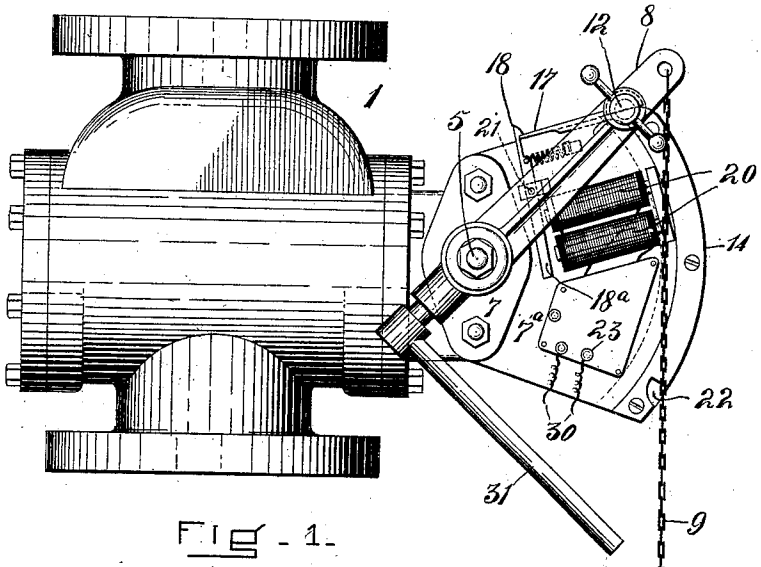


Fig. 1.

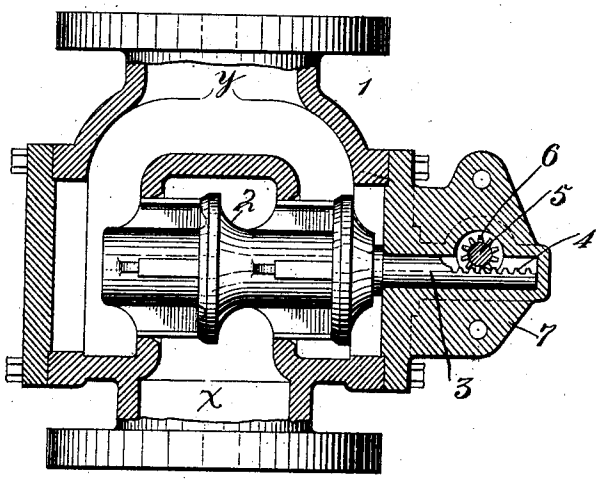
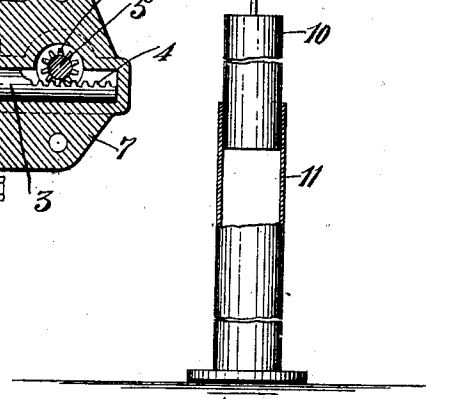


Fig. 2.



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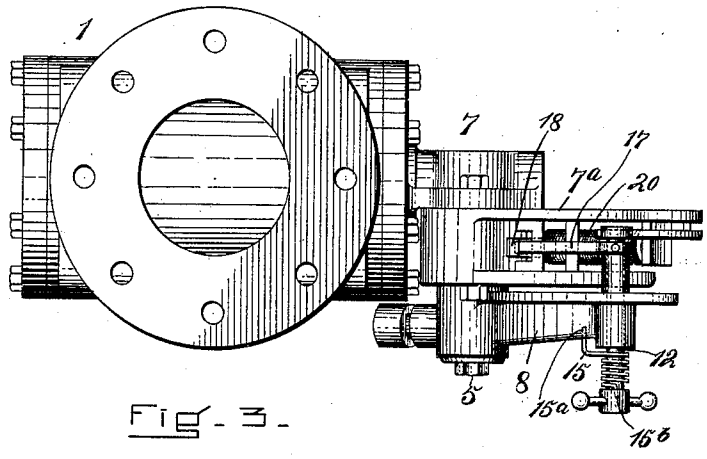


Fig. 3.

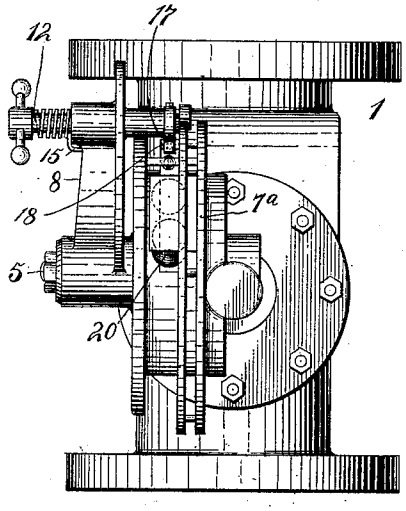


Fig. 4.

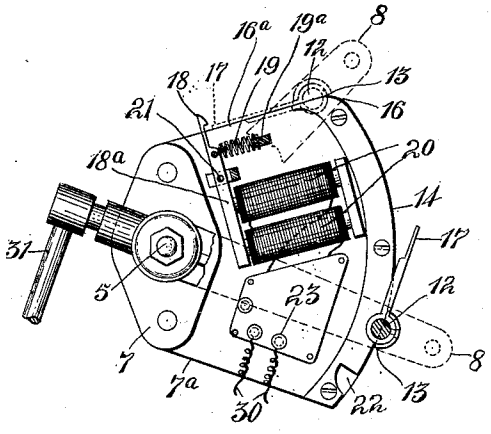


Fig. 5.

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NATHANIEL CHASE LOCKE, OF SALEM, MASSACHUSETTS.

AUTOMATIC VALVE-CONTROLLER.

No. 924,680. Specification of Letters Patent. Patented June 15, 1909.

Application filed October 15, 1907. Serial No. 397,494.

To all whom it may concern:

Be it known that I, NATHANIEL CHASE LOCKE, citizen of the United States, residing at Salem, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Automatic Valve-Controllers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to automatic valve-controllers, and is useful, among other purposes, as an automatic engine-stop.

The object of the invention is to simplify construction, and to cause the electrically-operated valve-controller to act directly on the main valve of the system.

In the accompanying drawings, Figure 1 is a front elevation of a main steam or other valve and automatic, electrically actuated valve-controller, made according to one form of my invention, and provided with a weight and dash-pot. Fig. 2 is an elevation, partly in section, at line 2—2, of Fig. 1, of the valve therein shown. Fig. 3 is a top-plan view of what is shown in Fig. 1. Fig. 4 is an end elevation thereof, looking toward the electrically actuated mechanism; and Fig. 5 is a detail of the electrically actuated mechanism shown in Figs. 1 and 3.

Referring to the drawings, 1 is a main steam or other valve-casing, having an inlet x and an outlet y, and an interior valve-body of any suitable construction. It is shown herein as a double puppet-valve. Valve-body 2 has a valve-stem 3, provided with a rack 4, which is reciprocated from a shaft 5, provided with a pinion 6. The valve stem 3 is mounted in a chamber formed in a bracket 7 which forms part of the valve-casing 1, and to which another bracket 7^a, carrying electrically actuated valve-operating mechanism, is attached. On shaft 5 an oscillatable arm 8 is mounted, the free end of this arm being provided, preferably, with a chain 9 and weight 10 mounted in dash-pot 11. Any other suitable means of weighting the arm 8 may be substituted for the dash-pot, weight and chain illustrated, if so desired. Arm 8 is provided with a transverse shaft 12, which is provided with a half-round edge portion 13 which contacts with and slides over a segment 14 attached to the outer portion of the bracket 7^a. Shaft 12 is provided with a coil-spring 15, one end of which is anchored in arm 8 at 15^a and the other end of which is anchored in the shaft 12 at 15^b. The upper corner 16 of segment 14 is rounded, so that the flat edge 13 may ride over that corner 16 and on to the flat continuous upper edge 16^a of bracket 7^a, carrying locking-bar 17 which is attached to shaft 12 into position to engage the latch-end 18 of the armature 18^a, when the armature is pulled by spring 19^a out of engagement with the magnet coils 20 on cessation of a current therethrough. (See Fig. 5.) The armature is pivoted at 21 to bracket 7^a, and consequently is pulled toward the magnet coils by passage of a current, whereupon the latch is moved out of engagement with the locking-bar 17. When the current through the magnet coils is interrupted, spring 19 pulls the latch-end 18 into position for engagement with the end of the lock-bar 17.

The lock-bar and lock are shown engaged in Fig. 1, and when they are in this position the arm 8 maintains the pinion 6 in engagement with the rack 4, as shown in Fig. 2, where the throttle-valve is shown open for passage of steam through valve-casing 1,—from boiler to engine, for example. If it is desired to close valve 2 to shut off the flow of steam,—for example in the case of accident or break-down at a distance,—an attendant, by means of the usual push-buttons or other means for starting a current through the leads 30 and magnet coils 20, energizes the coils, whereupon the armature 18^a is pulled toward the coils, unlatching lock-bar 17 and permitting weight 10 to fall and thereby move arm 8 and pinion 6 so as to give the valve-seating end-thrust to rack 4. The flat edge 13 of shaft 8 then rides over corner 16 and segment 14 until it reaches the recess 22 in the edge of the lower portion of segment 14, whereupon the operation of spring 15 is such as to give a partial rotation to shaft 12 and thereby carry the locking-bar 17 into engagement with the binding-post (23, for example,) and to cause the sounding of an alarm whereby notice is given that the main valve is closed.

When the upper flat edge 13 carried by the shaft 8 is over the thereto-opposed notch 22, the shaft is free to rock under the stress of the spring 15, the tension of which is adjusted so as to rock the latch-bar 17 whenever both flat edges 13 of shaft 8 do not abut on the edge of segment 14 or upper edge 19. The flat edges 13 of shaft 8 are produced by omitting the inner half of the shaft at the

point where it is opposed to the edge of the segment. The inner end of arm 8 is conveniently provided with a handle 31, to vibrate arm 8 manually when so desired.

What I claim is:—

1. The combination of a valve-casing and therein contained valve having a stem formed with a rack, of a pinion engaging the rack to seat and unseat the valve; automatic means for actuating the pinion; a locking-bar controlled by said means a notched segment over which the locking bar rides; a latch engageable and disengageable with the locking-bar; an armature controlling the movements of the latch; and a magnet for the armature.

2. The combination of a valve-casing and therein contained valve having a stem formed with a rack, of a pinion engaging the rack to seat and unseat the valve; automatic means for actuating the pinion; a notched segment and means coöperating therewith for locking the pinion in engagement with the rack to hold the valve open and a mechanism for generating signals.

3. The combination of a valve-casing and therein contained valve having a stem formed with a rack, of a pinion engaging the rack to seat and unseat the valve; means for actuating the pinion; means including a notched segment for locking the pinion in engagement with the rack to hold the valve open; means for automatically unlocking the pinion; and means for causing the unlocked pinion to rotate to close the valve and a mechanism for generating signals.

4. The combination of a valve-casing with a therein contained valve body having a stem formed with a rack of a pinion; a shaft carrying the pinion; a bar fixed on said shaft; a rockable shaft mounted in said bar; a notched segment with which the rockable shaft engages; means for automatically rocking said rockable shaft; a locking-bar carried by the rockable shaft; electro-mechanical apparatus provided with and actuating a latch which is engageable with and disengageable from said locking-bar; and means for automatically moving the bar attached to the pinion shaft.

In testimony whereof I have affixed my signature in presence of two witnesses.

NATHANIEL CHASE LOCKE.

Witnesses:

ANNIE P. SWASEY,

ALBERT W. VITTY.