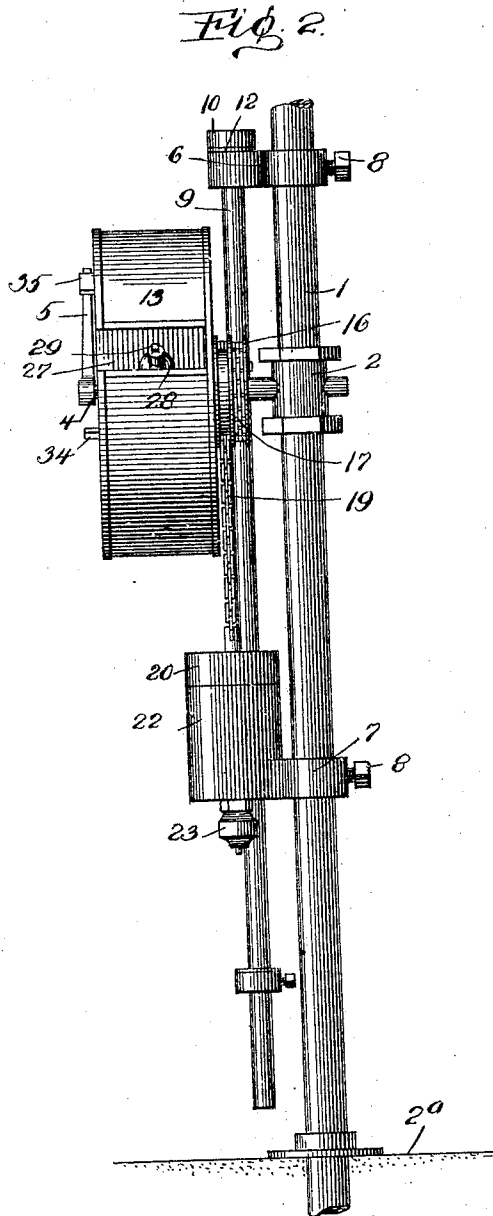
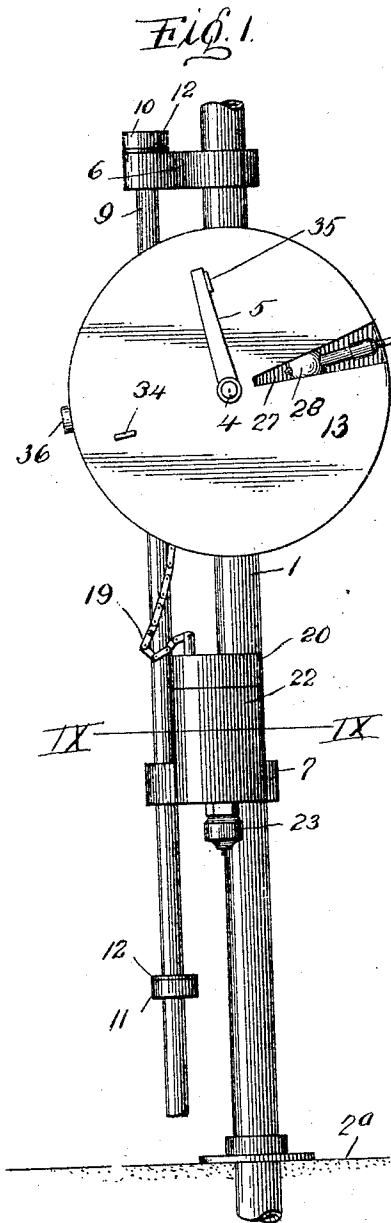


J. F. PARKER.
 AUTOMATIC SHUT-OFF.
 APPLICATION FILED DEC. 6, 1907.

Patented Nov. 16, 1909.
 4 SHEETS—SHEET 1.

940,050.



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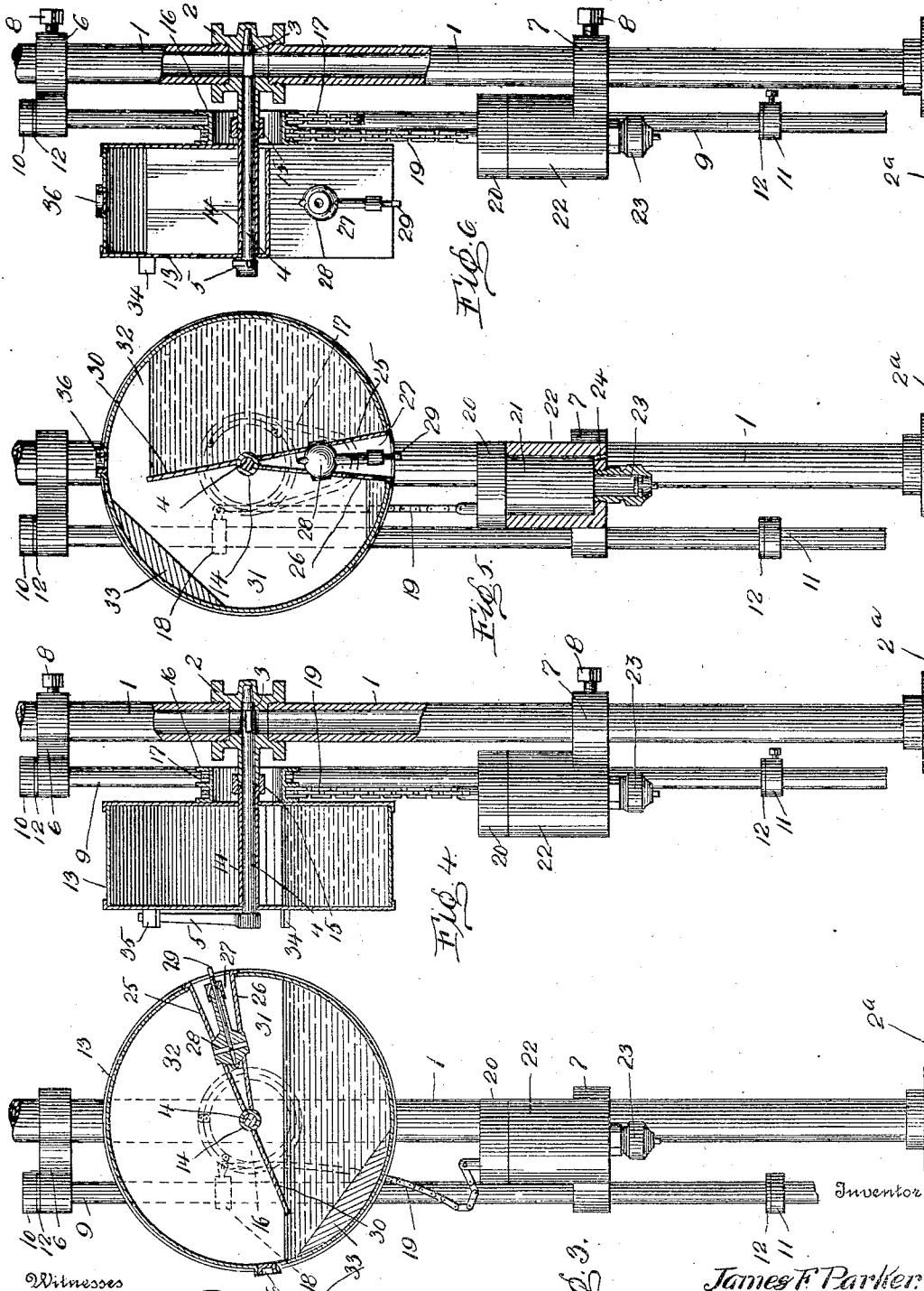
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4 SHEETS—SHEET 2.



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Fig. 3.

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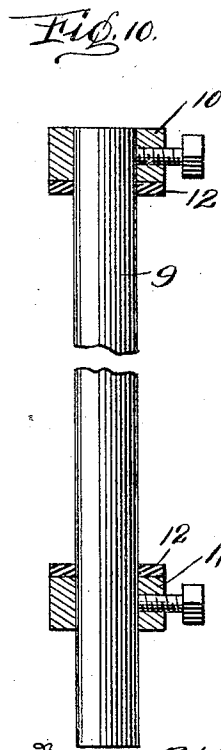
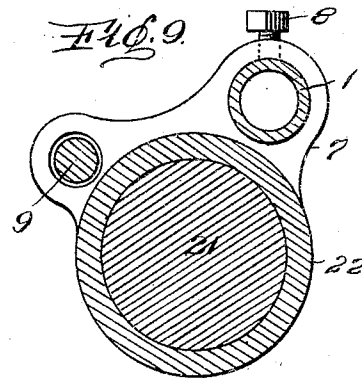
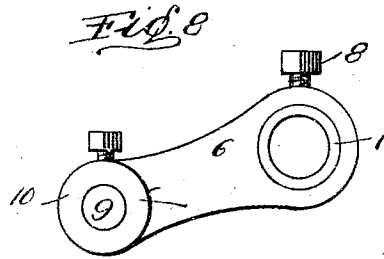
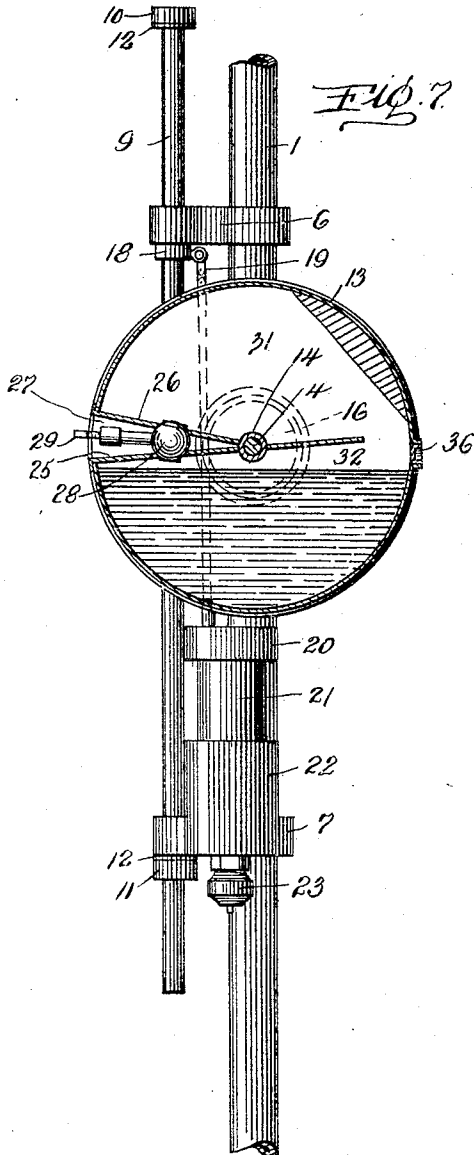
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940,050.

Patented Nov. 16, 1909.
 4 SHEETS—SHEET 3.



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940,050.

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4 SHEETS—SHEET 4.

Fig. 11.

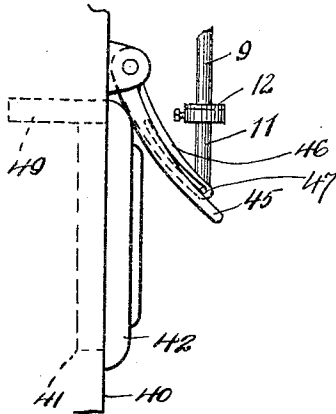
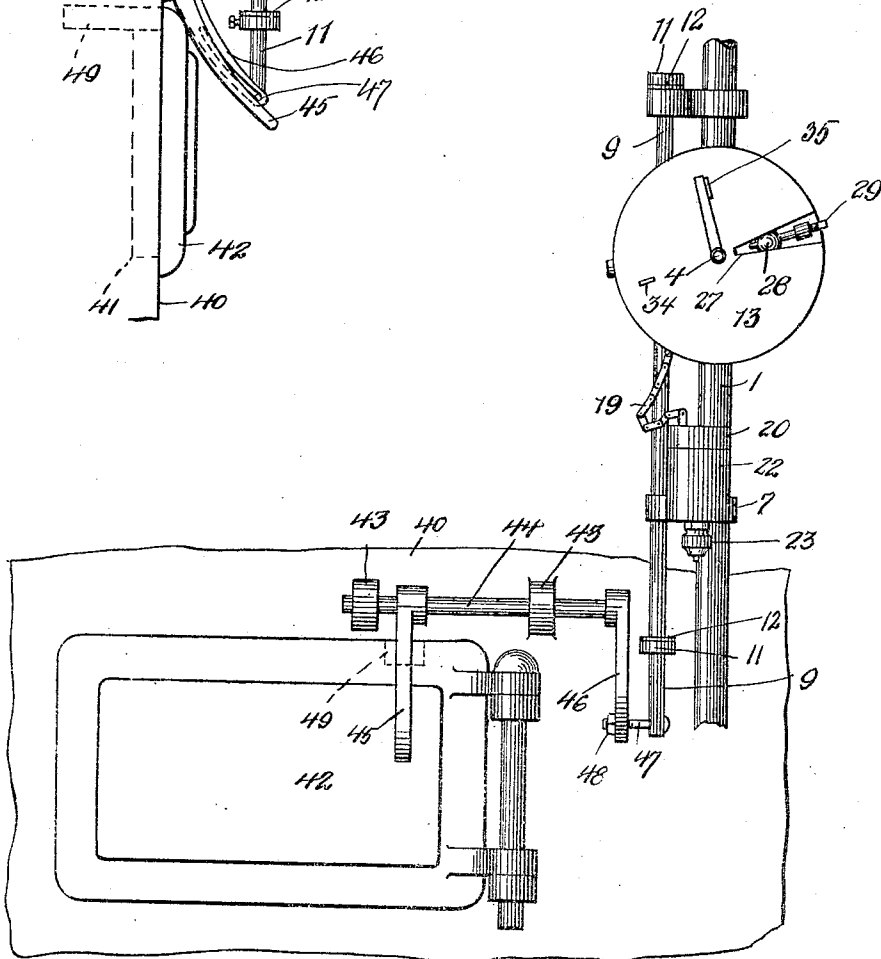


Fig. 12.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC SHUT-OFF.

940,050.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed December 6, 1907. Serial No. 405,408.

To all whom it may concern:

Be it known that I, JAMES F. PARKER, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Shut-Offs, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to an automatic shut-off for steam or gas lines or conduits for similar fluids, and the primary object of the invention is, to provide positive and reliable means for automatically closing a valve after a predetermined time.

Another object of this invention is to provide a device that can be used for closing valves and switches, or for actuating various kinds of mechanism.

20 The embodiment of the invention herein illustrated and described is particularly designed for an injector of a furnace, the shut-off being actuated by the opening of a furnace door to close a valve and allow for a predetermined period of time or vice versa. The device by which I accomplish this result comprises a simple and inexpensive structure, positive in its action and free from danger of injury by ordinary use.

30 The invention consists in the novel construction, combination and arrangement of parts to be presently described and then specifically pointed out in the appended claims.

In the drawings: Figure 1 is a front elevation of a device embodied in the invention, Fig. 2 is a side elevation of the same, Fig. 3 is a front elevation partly in section, illustrating the inactive or normal position of the device, Fig. 4 is a side elevation of the same, partly in section, Fig. 5 is a front elevation, partly in section, illustrating the device as partially actuated to place the same in an operative position, Fig. 6 is a side elevation of the same partly in section, Fig. 7 is a front elevation, partly in section, illustrating the device completely actuated to place the same in an operative position, Fig. 8 is a plan of a bracket, Fig. 9 is a horizontal sectional view taken on the line IX-IX of Fig. 1, Fig. 10 is an elevation of a portion of the actuating rod, illustrating the buffers thereof in section, Fig. 11

is a detail end view of a means for operating the actuating rod, and Fig. 12 is a front elevation of the device and operating mechanism for the actuating rod.

In the accompanying drawings, I have illustrated a gas or steam supply pipe 1 suitably supported as at 2^a. Interposed in this pipe is a valve body or casing 2 having a plug valve 3 provided with an elongated stem 4, the end of which carries a radially disposed arm 5.

The pipe 1 above the valve body or casing 2 is provided with an adjustable bracket 6, and below said valve with an adjustable bracket 7, said brackets being adjusted upon the pipe 1 by set screws 8. These brackets serve as guides for a vertical actuating rod 9 having adjustable collars 10 and 11 provided with buffers 12. These collars serve to limit the movement of the actuating rod, and the collar 10 also supports the rod 9 in said brackets.

On the stem 4 of the plug valve 3 is a sleeve 14 which is connected to the bonnet of the valve body or casing 2 and collar or union 15, and on this sleeve 14 is mounted a drum 13.

The rear wall of the drum or casing 13 carries a flanged collar 16 serving functionally as a double pulley wheel. Attached to the collar between one set of flanges is one end of a chain 17, the other end of this chain being connected to the vertical actuating rod, as at 18. Another chain 19 has one end connected to the flanged collar 16, and the other end of this chain is connected to the head 20 of the plunger 21, said plunger being located in the dash-pot or cylinder 22 carried by the bracket 7. The lower end of the dash-pot or cylinder 22 is provided with a check valve 23 of a conventional form and with a port 24.

The drum or casing 13 is provided with two radially disposed partitions 25 and 26, these partitions providing a V-shaped compartment or niche 27 in the drum or casing, said compartment or niche being partially closed by the back of said drum or casing. In the compartment or niche 27 is located a needle valve 28, this needle valve establishing communication between the inner sides of the partitions 25 and 26. The stem 29 of

said valve protrudes from the periphery of the drum or casing whereby said needle valve can be easily regulated.

A radially disposed partition 30 is arranged in the drum or casing, said partition alining with the partition 25, and being of a lesser length to provide communication between the compartments 31 and 32 formed by the partitions 25, 26 and 30. These partitions practically divide the drum or casing into two compartments adapted to contain oil, water or a similar liquid or fluid. As a counterpoise for the liquid when contained in one compartment, I provide the drum or casing with a weight 33, this weight being secured to the inner side of the drum or casing adjacent to the partition 30.

The front wall of the drum or casing is provided with two lugs 34 and 35, these lugs being employed whereby the elongated valve stem 4 can be moved in unison with the revoluble drum or casing 13.

In Figs. 11 and 12, the device is shown as being employed in connection with a furnace door for operating the actuating rod 9. This operating mechanism is shown merely for the purpose of illustrating an application of the invention in connection with a furnace, and no claim is made by me to this or any other specific form of rod operating mechanism, as the means employed in each instance will depend upon the conditions existing.

In the form of operating mechanism shown, 40 indicates a portion of a furnace wall the door-way 41 of which is normally closed by a door 42. Above the door 42 is arranged bearings 43 for a rock-shaft 44 carrying a curved arm or cam 45 which hangs down in front of and engages the door 42 when the latter is closed. On one end this shaft carries a slotted crank 46 connected with the lower end of the rod 9 by a bolt 47 and nut 48. The door 42 is provided at its upper edge, at a point so as to be in line with the arm or cam 45, with an inwardly-projecting extension or rest 49 upon which the arm or cam 45 rests and is supported when the door is swung to the open position.

Operation: The device is shown in Figs. 1 to 4 inclusive as normally inactive, the valve 3 being closed, the liquid lying in the compartment 31, and the arm 5 engaging the lug 35. Assuming that the needle valve has been properly regulated, the manner of placing the device in an active position is as follows: The actuating rod 9 is elevated, as by opening of the furnace door 42, and as this rod is connected to the flanged collar 16 by the chain 17, said collar and drum or casing will be partially rotated, and as said drum or casing is mounted upon the elongated valve stem 4, the valve plug 3 will be

turned to open the valve 2, and clear the passage in the pipe 1.

When the actuating rod 9 is elevated to partially rotate the drum or casing 13, the valve stem 4 remains stationary until the lug 34 strikes the arm 5, the liquid during this temporary movement remaining in the compartment 31. A further movement of the actuating rod 9 moves the drum or casing 13 and the valve stem 4 in unison, causing the liquid contained within the compartment 31 to be discharged therefrom into the compartment 32 as illustrated in Fig. 7 of the drawings. This further movement of the actuating rod 9, drum or casing 13 and valve stem 4, has caused the chain 19 to elevate the dash-pot or cylinder and plunger 21 by reason of the fact that the chain 19 is wound oppositely upon the flanged collar 16 from that of the chain 17.

Upon the support for the actuating rod 9 being removed, as by closing the door 42 the weight of the plunger 21 in the dash-pot or cylinder 22 returns the drum or cylinder to the position illustrated in Fig. 5 of the drawings, allowing the liquid to remain in the compartment 32 of the drum or casing.

The port 24 is adapted to retard the downward movement of the plunger 21, while the counterpoise 33 assists the weight of the liquid within the compartment 31 in gradually returning the drum or casing to the position illustrated in Fig. 3 of the drawings. The liquid contained within the compartment 32 now slowly passes into the compartment 31, the rapidity of the flow of liquid being controlled by the needle valve 28. Since the counterpoise 33 is located in the compartment 31, the delivery of a sufficient quantity of liquid into said compartment will overbalance the liquid contained within the compartment 32, causing the drum or casing to rotate and close the valve plug 3, shutting off the supply of gas or steam passing through the pipe 1. The preparatory movement of the drum or casing simply places the liquid within the compartment 31 in position to be easily and quickly discharged from this compartment into the compartment 32, when the drum or casing is further moved to open the valve 3 and raise the plunger 21. It is apparent that the dash-pot or cylinder 22 controls the return movement of the drum or casing, but this movement can be easily regulated by the size of the port 24.

Through the medium of the needle valve 28, the operation of the device can be controlled to a nicety and can be regulated to operate in a few seconds or for a period of time covering a couple of hours.

I do not care to confine myself to the specific use of the device, as it can be utilized not only as a shut-off operative device, but

for moving various mechanism at predetermined times.

A liquid not susceptible to freezing is preferably used, and by means of the normally closed opening 36 in the drum or casing, the latter can be readily drained and the liquid renewed.

Such variations in my invention as are within the scope of the appended claims can be resorted to without departing from the scope of the invention.

Having now described my invention, what I claim as new, is:—

1. In an automatic shut-off, the combination with a pipe, a valve carried thereby and provided with an elongated stem, of a drum loosely mounted upon said stem and having two compartments formed therein, a counterpoise located in one of said compartments, a needle valve arranged between said compartments, a flanged collar carried by said drum, lugs carried by said drum, an arm carried by said valve stem and adapted to engage said lugs, an actuating rod movably supported by said pipe, a chain connection between said collar and said actuating rod, and a dash pot supported by said pipe and having a plunger connected to said collar, substantially as described.

2. In an automatic shut-off, the combination of a pipe, a valve carried thereby and provided with an elongated stem, of a drum loosely mounted upon said stem and having two compartments formed therein, a counterpoise located in one of said compartments, a flanged collar carried by said drum, an actuating rod movably supported by said pipe and connected to said collar, a dash pot supported by said pipe and having a plunger connected to said collar, and means for simultaneously revolving said drum and said valve stem.

3. In a shut-off device the combination with a pipe, a valve carried thereby and provided with an elongated stem, of a drum

journalled upon said stem and having compartments formed therein, a counterpoise in one of said compartments, a flanged collar carried by said drum, means carried by said pipe and connected to said collar for revolving said drum, means carried by said valve stem and engaging said drum for moving the stem in unison with said drum, and means carried by said pipe for cushioning the return movement of said drum.

4. In a shut-off device, the combination with a pipe, a valve carried thereby and provided with an elongated valve stem, of a drum revolubly mounted upon said stem, said drum having compartments formed therein, a needle valve arranged between said compartments, a flanged collar carried by said drum, means supported by said pipe for revolving said drum, means for moving said stem in unison with said drum, and means carried by said pipe for retarding the return movement of said drum.

5. In a shut-off device, a supply pipe, and the valve therein having an extended stem projecting at right angles to the supply pipe, a sleeve revoluble on said stem, a drum mounted on said sleeve, the said stem extending through the front and rear walls of the drum, an arm on the outer end of said stem, means carried by the outer end of the drum to engage said arm whereby the stem is moved in unison with the drum, a reciprocatory actuating rod, a pulley carried by said drum on the inner end thereof, connections between said rod and the pulley whereby the drum is rotated together with the stem when the rod is moved in one direction, and means for moving said rod in one direction.

In testimony whereof I affix my signature in the presence of two witnesses.

JAMES F. PARKER.

Witnesses:

MAX H. SROLOVITZ,
A. J. TRIGG.