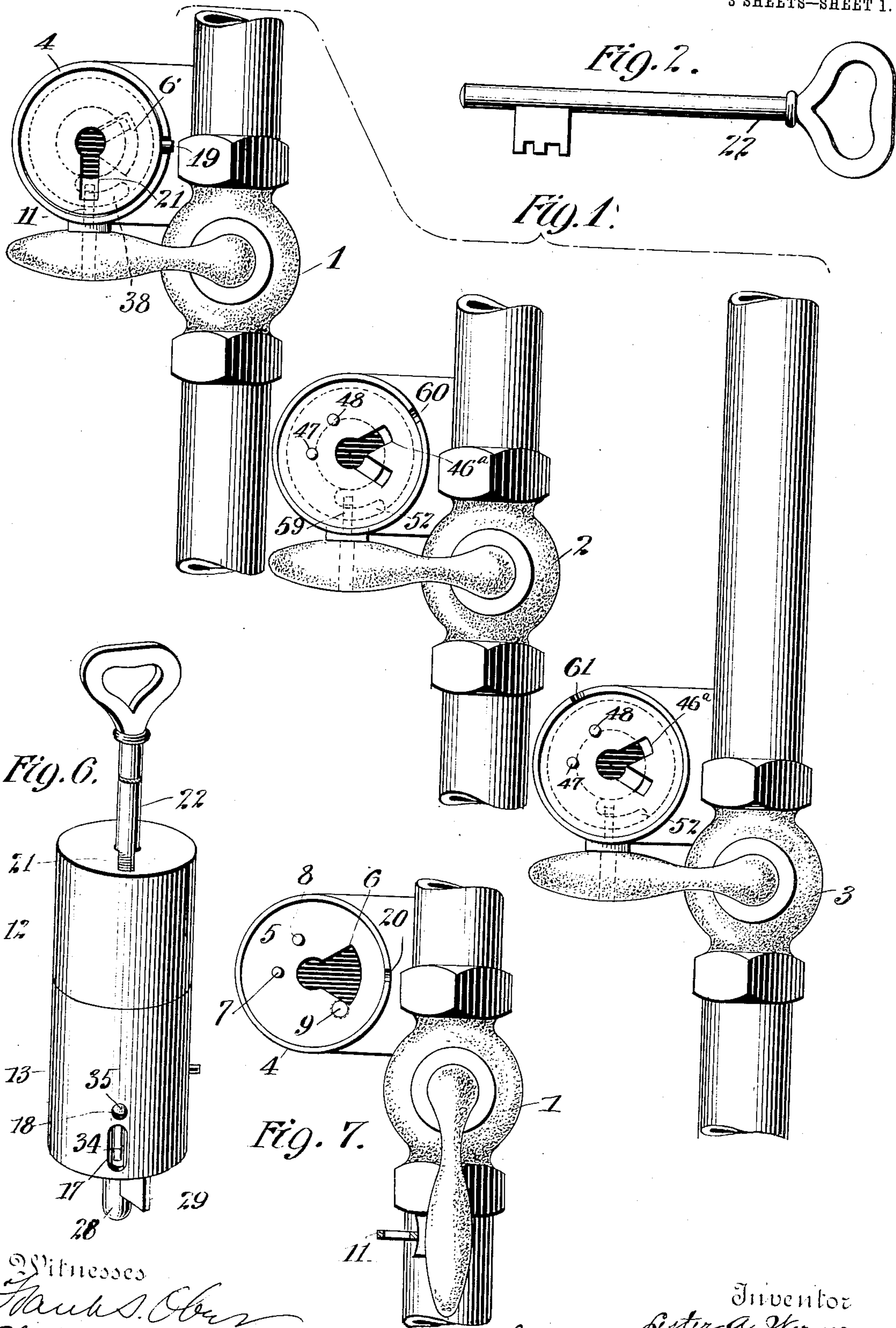


No. 832,106.

PATENTED OCT. 2, 1906.

L. A. WERNER.  
VALVE LOCKING MECHANISM.  
APPLICATION FILED MAY 10, 1905.

3 SHEETS—SHEET 1.



Witnesses  
Mark S. Ober  
Waldo M. Chapin

Inventor  
Lester A. Werner  
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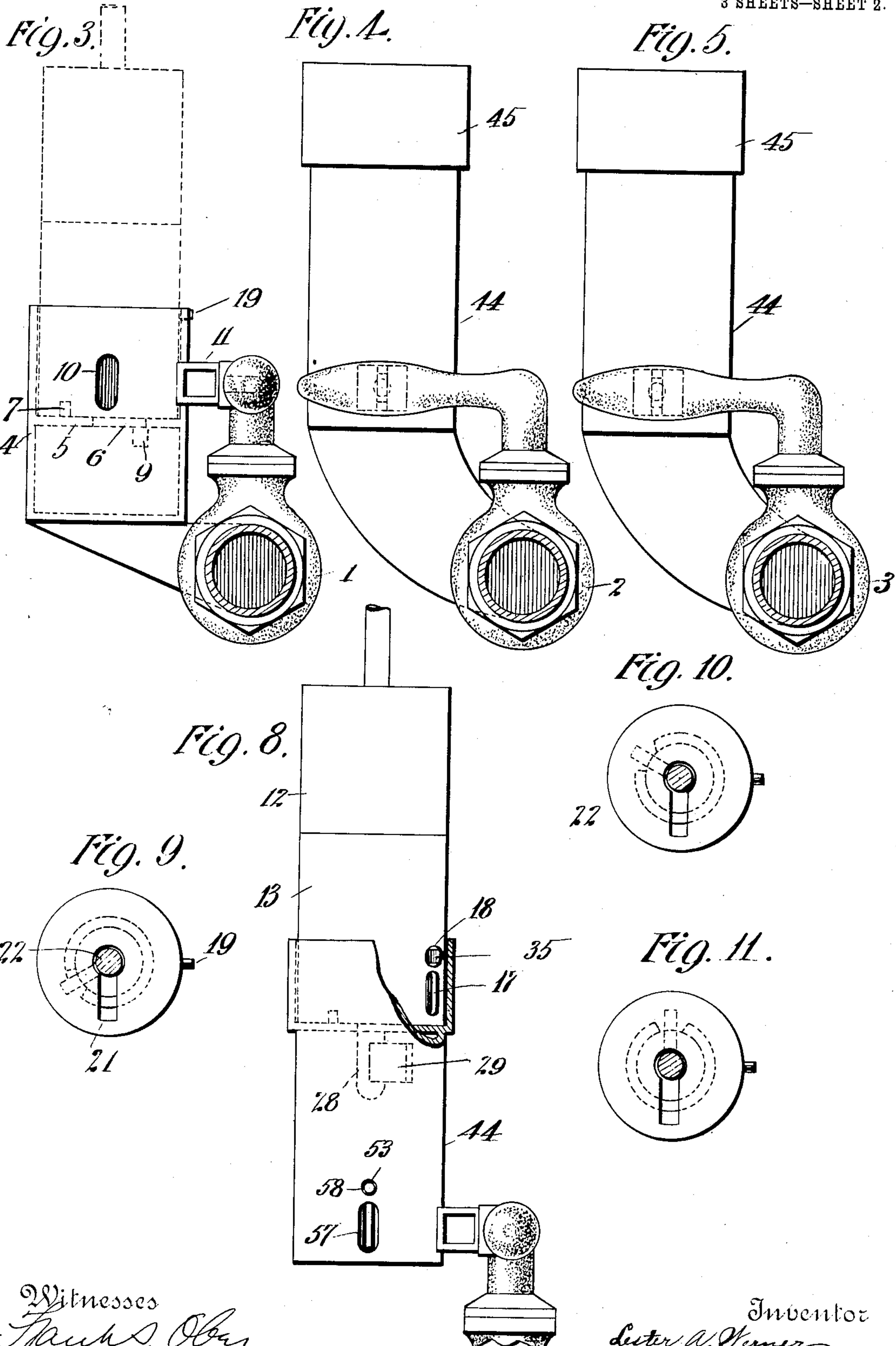
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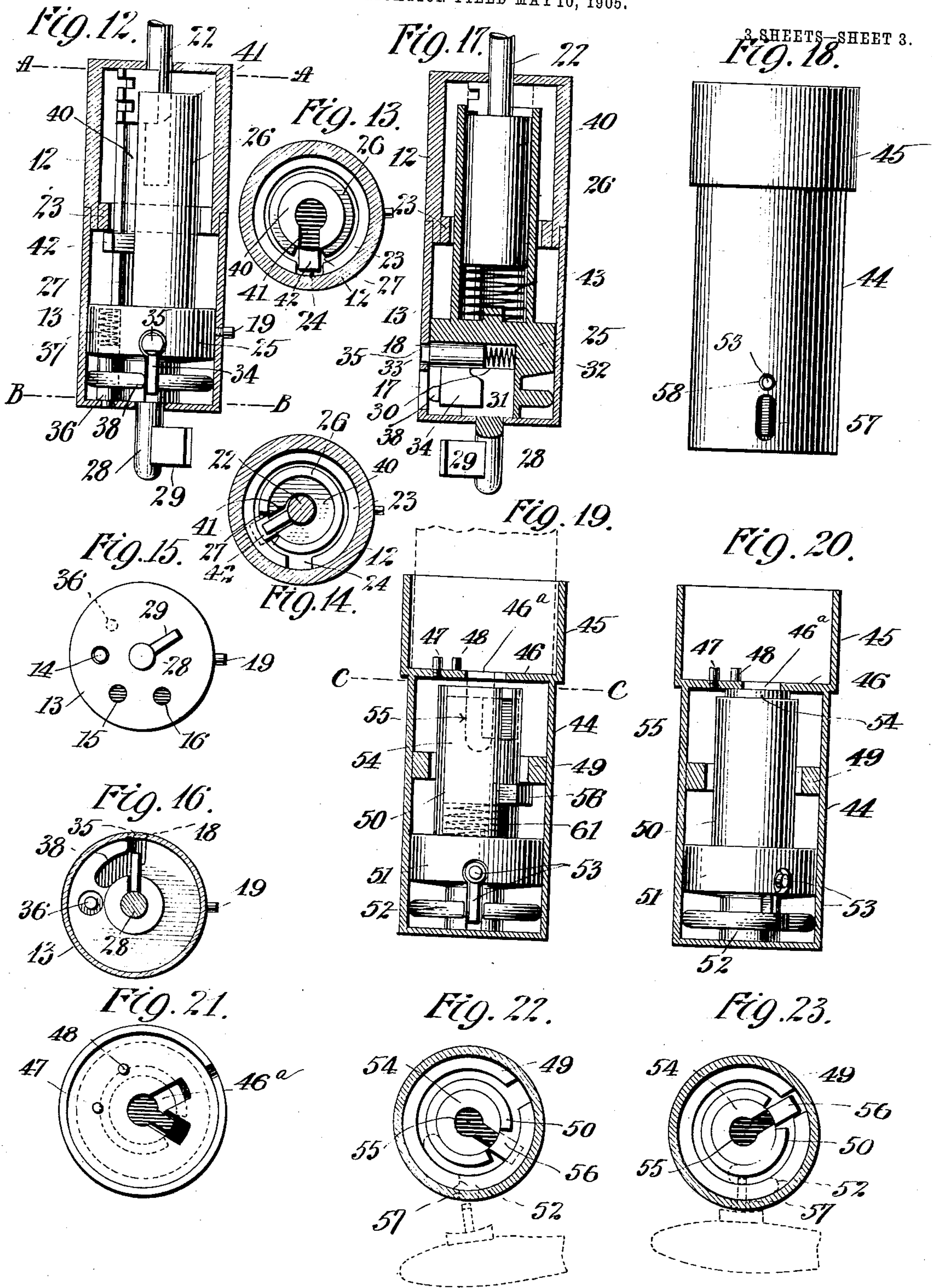


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3 SHEETS-SHEET 3.



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# UNITED STATES PATENT OFFICE.

LESTER A. WERNER, OF NEW YORK, N. Y., ASSIGNOR TO WATER OVER-FLOW PREVENTIVE CO., A CORPORATION OF NEW YORK.

## VALVE-LOCKING MECHANISM.

No. 832,106.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed May 10, 1905. Serial No. 259,659.

*To all whom it may concern:*

Be it known that I, LESTER A. WERNER, a citizen of the United States, residing at the city of New York, in the borough of Manhattan and State of New York, have invented certain new and useful Improvements in Valve-Locking Mechanism, of which the following is a full, clear, and exact description.

My invention comprises means to prevent a watchman or janitor from locking up a store or building without properly turning off the supply of water or gas, fastening the windows, or performing any other necessary acts.

The invention comprises, broadly, means for trapping the janitor's key to the building in such a manner that the same cannot be released until he has performed some required act or series of acts.

More specifically, my invention involves means in connection with the valves of water or gas pipes to retain the key of the building or store, so that it becomes necessary to turn off the supply of water or gas at one or more points before the key is freed, so as to become available for locking the store or building. Furthermore, when the store or building is unlocked the supply of water or gas cannot be turned on without trapping or securing the key of the building, thus necessitating the turning off of the supply before the key can be used for locking up.

My invention will be readily understood from the following description, taken in connection with the accompanying drawings, wherein like reference characters refer to the same parts.

Figure 1 shows three valves, one or more of which the janitor is required to close before locking the main door of the building. Fig. 2 shows the key used for locking the building and also the valves. Figs. 3, 4, and 5 show the three valves of Fig. 1 looking upward from the bottom, valve 1 being in open position. Fig. 6 illustrates the main key in combination with the auxiliary-key mechanism. Fig. 7 shows valve 1 in its open position and with the auxiliary-key mechanism of Fig. 6 removed from casing 4. Fig. 8 shows the auxiliary-key mechanism applied to the locking means illustrated in Fig. 4, the same being shown with the valve in open position. Figs. 9, 10, and 11 illustrate the relations of the main-key and the auxiliary-key mechanism after one, two, and three unlocking move-

ments, respectively. Fig. 12 illustrates a longitudinal section of the auxiliary-key mechanism with the internal parts in elevation. Fig. 13 is a section of Fig. 12 on the line A A with key 22 removed. Fig. 14 is similar to Fig. 13, but shows the main key inserted and turned one-sixth of a revolution, which corresponds to one unlocking movement. Fig. 15 is a bottom plan view of the device as shown in Fig. 12. Fig. 16 is a section on the line B B of the device as shown in Fig. 12 looking upward. Fig. 17 is a section of the auxiliary-key mechanism at right angles to the plane of the section of Fig. 12. Fig. 18 is a side elevation of the locking mechanism of valve 2 or 3. Fig. 19 is a longitudinal sectional view of the device shown in Fig. 18. Fig. 20 is similar to Fig. 19 with the internal mechanism turned one-sixth of a revolution or into locking position. Fig. 21 is a view looking downward into the upper end of the locking mechanism as shown in Fig. 19. Fig. 22 is a sectional view of Fig. 19 on the line C C looking downward and showing the locking mechanism in unlocked position. Fig. 23 is a view similar to that of Fig. 22, but showing the locking mechanism in locked position.

Fig. 1 illustrates three valves, which it is necessary to close and lock before the main key of the building is released in order to prevent a waste of water, gas, or the like during the closed condition of a building. These devices which require operation before the key is released to permit locking the building or any other operation need not be valves, but may be any devices which it is desirable should be operated before the building is closed for the night. On the other hand, the main key to the building is required to unlock these valves in the morning, so that their closure before the building can be locked for the night is insured. The locking means applied to valve 1 comprises an outer casing 4, rigidly attached to the valve 1, its connecting-pipes, or to any other desirable support, said casing being provided with a partition 5, extending across the same at about midway its length and provided with a key-opening 6 of the shape shown in Fig. 7. This partition 5 is provided with two lugs 7 and 8, sixty degrees apart on its upper side, and a lug 9, adjacent to the key-opening on the under side. Casing 4 is provided with



the opening 10 to admit the perforated lug or keeper 11, attached to the handle of valve 1.

Coöperating with casing 4 is the auxiliary-key mechanism. (Shown in elevation in Fig. 6 and in section in Figs. 12 and 17.) This mechanism includes an upper casing 12 and a lower casing 13, the latter being provided in its bottom with three small openings 14, 15, and 16, equally distant from the center and sixty degrees from each other. On the side of casing 13 near the lower end is opening 17 for the reception of lug or keeper 11 on the handle of valve 1 when the said auxiliary-key mechanism is used in conjunction with casing 4. Directly above opening 17 is another smaller opening 18 for the reception of a locking-pin, described hereinafter. From the outer side of casing 13 projects a small pin 19, adapted to coöperate with notch 20 in the upper edge of casing 4. Casing 12 has the opening 21 for the reception of key 22 at its upper end and is shouldered at its lower end to fit within casing 13. At its lower end it also has the collar 23 on its interior, said collar extending only partially around the casing, leaving the small gap 24. Within these two casings 12 and 13 is rotatably mounted the member 25, comprising tube 26 at its upper end, said tube being slotted, as at 27. From the main body of member 25 extends shank 28, bearing the key-lug 29, shank 28 extending through the lower end of casing 13, with key-lug 29 on the outside. Extending laterally of the member 25 is the small cylindrical chamber 30, communicating with the slot 31 below. Reciprocating in these recesses and pressed outward by the spring 32 is the catch member 33, comprising an upper cylindrical portion sliding in chamber 30, and the blade-like portion 34, working in slot 31. The outer end of this catch member is provided with the beveled end 35 to catch in opening 18 in shell 13. Catch 36 is slidably mounted in member 25 and is pressed downward by spring 37 to engage with its end in openings 14, 15, or 16 in casing 13. Member 25 is also provided with the curved hook 38 to lock lug or keeper 11 when the latter is thrust in opening 17. Slidably mounted in tube 26 is plunger 40, provided at its upper end with the recess 41 to receive the key 22 and with the lug 42 to coöperate with ring 23 to keep the plunger 26 down against the pressure of spring 43, which is interposed between the member 25 and the lower end of plunger 40. The locking means for valves 2 and 3 are alike and similar in many respects to the auxiliary-key mechanism just described. Each comprises a casing 44 with an enlarged upper end 45, separated from the main casing by a partition 46 with a key-opening 46<sup>a</sup> of the shape illustrated in Fig. 21, said opening having two rectangular portions at an angle of sixty degrees apart. On the upper part of partition 46 are two pins 47 and 48. Casing 44 has a partial ring 49, similar to ring 23, a slotted hollow cylinder 50, main body portion 51, locking-hook 52, spring-pressed detent 53, spring 61, sliding spring-pressed plunger 54, with key-recess 55 at its top and lug 56 at its side, all of which will be understood from their analogy to the parts of the auxiliary-key mechanism. Casing 44 has the opening 57 in its side to receive the locking lug or keeper of the handle of valve 2 or 3 and a recess 58 to receive pin 53.

The operation of the device is as follows: The watchman or janitor after unlocking the main door of the building, or, in fact, using the key 22 in any other necessary manner, unlocks the handles of the valves, the fasteners of the windows, or other devices which are necessary for use during the day by inserting the key 22 in the opening 21, the auxiliary-key mechanism 12 13, Fig. 6, having been left in casing 4 of valve 1 in the locking operation of the previous evening. Key 22 then fits in recess 41, and the plunger 40 is pressed downward until the lug 42, which was resting in the recess 24, is below the lower surface of ring 23, at which time the operator turns the key clockwise sixty degrees, as shown in Fig. 14. Lug 9 prevents the part 25 from turning too far in the unlocking movement by arresting the movement of key 29. Neither catch 35 nor 36 will stop the parts, because of the beveled end of the former and because of the pins 7 and 8, which keep catch 36 raised. In this movement the member 25 with its hook 38 is turned so as to release the lug or keeper 11 of the handle of valve 1. When the key and member 25 have been turned sixty degrees, pin 35 jumps into hole 18 and pin 36 jumps into hole 14, when the auxiliary-key mechanism is removed from casing 4, thus securely locking member 25 and casing 13 together. Key 22 cannot now be withdrawn from casing 12, because its blade is out of alinement with the opening 21. Nevertheless, key 22, together with the whole auxiliary-key mechanism to which it is locked, can be removed from casing 4, key-blade 29 passing through the relatively large opening 6. In this manner the handle of valve 1 is unlocked. To unlock the handle of valve 2, the auxiliary-key mechanism 12 13, with the key 22 fastened to it, as described above, is inserted in chamber 45, key-blade 29 passing through opening 46<sup>a</sup>, so that key-blade 29 is seated in recess 55. By inserting the key mechanism in chamber 45 in this manner pin 47, pressing upward on pin 36, and being of a length equal to the thickness of chamber 13, unlocks member 25 from its casing 13. When key 29 is fully inserted in recess 55, the plunger 54 is pressed downward in opposition to spring 59 until lug 56 is below ring 49, when the whole key mechanism can be turned clockwise to release hook 52 from its coöperating lug or keeper, Figs. 12 13



19 and 22. In this operation the two keys 22 and 28 turn as one key, member 25 rotating in its shell 13, the beveled catch 35 allowing clockwise rotation, but preventing a reverse movement. Hook 52 turns with keys 22 and 28, because catch 53 is held away from hole 58 so long as lug or keeper 59 is in opening 57. Key 22 has now been turned one hundred and twenty degrees relative to keyhole 21, Fig. 10, and is still locked therein. In this new position of the parts catch 36 jumps into hole 15 as soon as the auxiliary-key mechanism is removed from chamber 45 and catch 53 jumps into its opening 58. The auxiliary-key mechanism can now be removed from keyhole 46<sup>a</sup>, key-lug 29 passing through the other leg of the keyhole-opening. To unlock the handle of valve 3, similar steps are taken and key 22 is moved another sixty degrees relative to keyhole 21, Fig. 11, in which new position it cannot be removed from the auxiliary-key mechanism, and catch 36 is in hole 16. In placing this auxiliary-key mechanism in any of the casings 4 or 45 lug 19 co-operates with recesses 20, 60, or 61 to insure proper position of the parts. To lock the valve - handles, a reverse operation takes place, so all the valves which have been unlocked must be locked before the key is free for other uses. The valve-handles must be in their off positions before their locking can be accomplished, because it requires the co-operation of lugs 11 or 59 with catches 34 and 53 to allow parts 25 or 51 to be rotated to a position where the key can be removed. Pins 7 and 8 of casing 4, and 47 and 48 of casing 44, are for the purpose of unlocking member 25 from casing 13 by raising pin 36, pins 7 and 47 being used when the devices are being unlocked and pins 8 and 48 when they are being locked. It will be noted that in unlocking valve 1 member 25 becomes locked to casing 13 by catch 35, and in unlocking valve 2 member 51 is locked to casing 44 by catch 53, and similarly for valve 3. Due, however, to the beveled end of catch 35, member 25 can be readily turned clockwise whenever catch 36 is released. Catch 36 holds the internal parts of the auxiliary-key mechanism in the position to which they have been turned and prevents the backward turning of key 22. The number of holes 14 15 16 depends upon the number of valves to be operated. It will be noted that spring 43 operates to raise lug 42 into recess 24 when the parts are moved to locking position and key 22 is removed. When lug 42 is in this recess, the locking-hook 38 cannot be moved. Spring 61 performs a similar function with lug 56 and hook 52. It is apparent also that when valve 1 is locked in place its keeper 11 passes through both openings 10 and 17, thus locking the auxiliary-key mechanism in casing 4.

My invention is not limited to the details of construction herein illustrated and described, which may be varied greatly and still fall within the scope of the appended claims. It is obvious that any number of locks and valves may be used with proper modifications of amount of key movement and the number and position of catch-holes in shell 13.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. A locking system comprising a plurality of casings or boxes arranged in proximity to the various electric, gas, water and other valves of a building, an auxiliary-key mechanism adapted to be inserted into said casings or boxes in a regular sequence or succession, whereby the various valves are locked, a key insertible into said auxiliary-key mechanism, and means whereby said key is trapped in said key mechanism until all of the valves have been locked.

2. In a locking system, a plurality of casings or boxes attached to the various gas, water and electric valves of a building, an auxiliary-key mechanism insertible into said casings or boxes, means whereby said valves can be locked by said auxiliary-key mechanism when it is inserted in the various valves, a key insertible into said auxiliary-key mechanism, means for preventing the auxiliary-key mechanism from operating unless said key is so inserted, and means whereby said key is trapped therein until all the valves have been locked.

3. In a device of the character described, a plurality of valves, a lock for each valve, a key, an auxiliary-key mechanism into which the key may be inserted and removed, retaining means whereby each locking movement of the key moves the latter a single step from its removable position from the auxiliary-key mechanism, so that as many unlocking movements of the key are required as there have been locking movements before the key is in its removable position.

4. In a locking system, a plurality of casings or boxes attached to the usual valves of a building, an auxiliary-key mechanism, a key insertible into said auxiliary-key mechanism, means whereby said auxiliary-key mechanism is effective to unlock the various valves when the said key is contained therein, and means for trapping said key therein until all of the various valves have been locked.

In witness whereof I subscribe my signature in the presence of two witnesses.

LESTER A. WERNER.

Witnesses:

FRANK S. OBER,

WALDO M. CHAPIN.