(No Model.) 3 Sheets—Sheet 1.

P. E. GLAFCKE.

PRISON CELL, SAFE, OR OTHER DEPOSITORY.

No. 494,253. Patented Mar. 28, 1893.

FIG. 1.

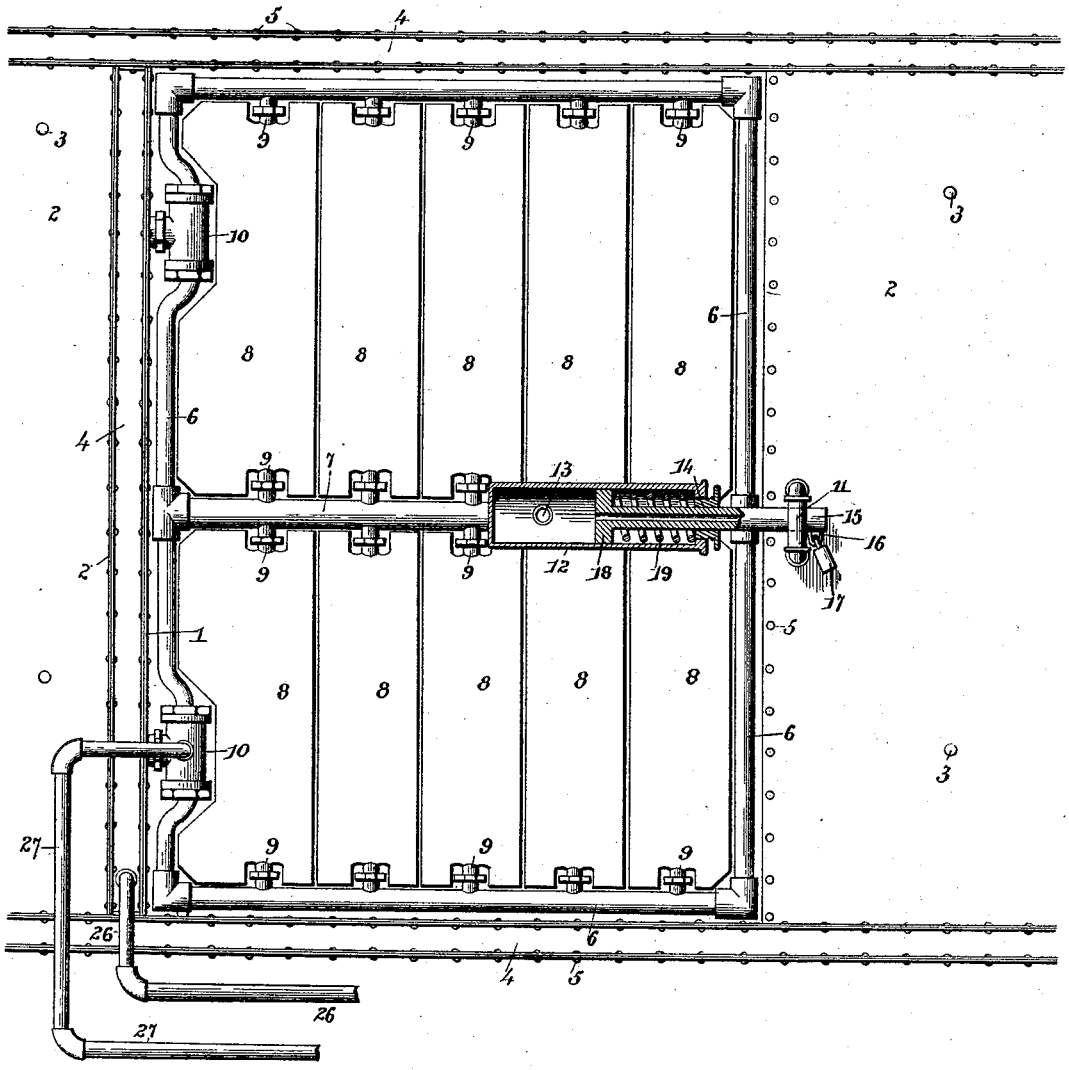
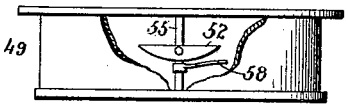


FIG. 2.



Witnesses

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(No Model.) 3 Sheets—Sheet 2.

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FIG. 3.

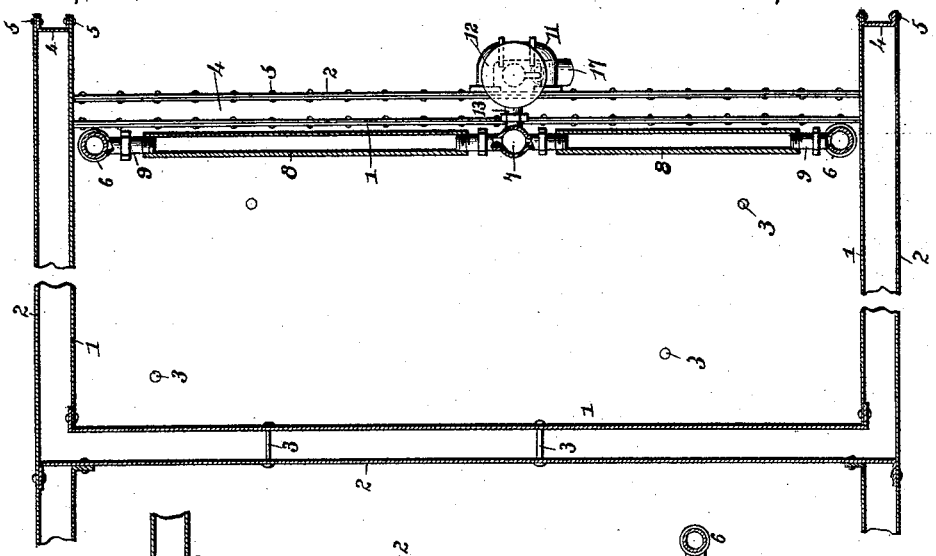
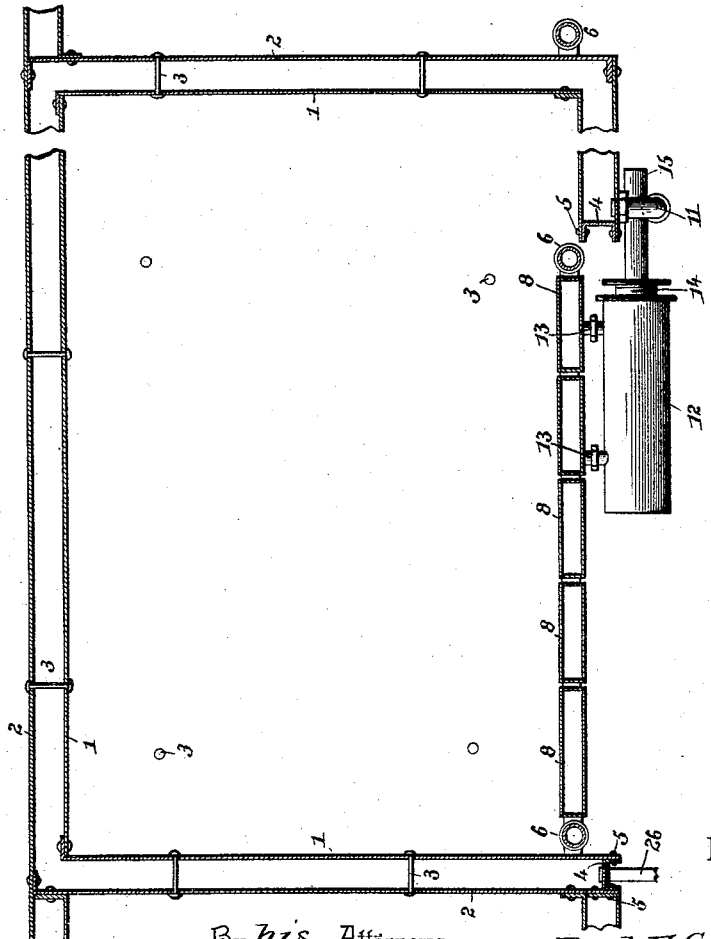


FIG. 4.



Witnesses

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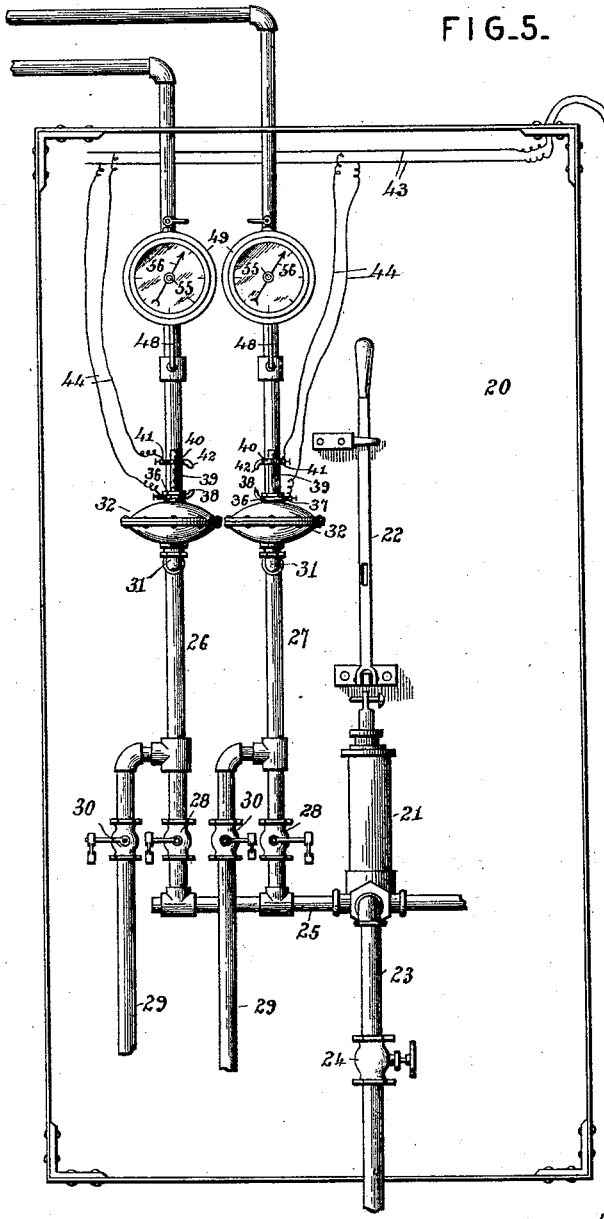
FIG. 5.



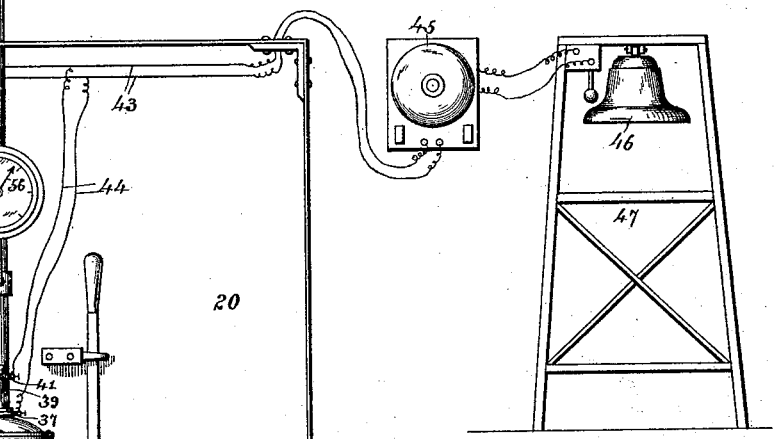


FIG. 6.

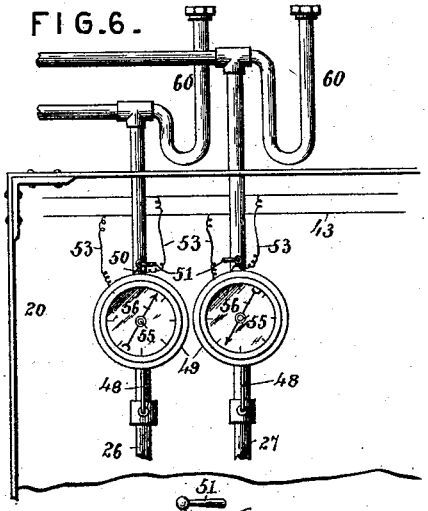


FIG. 7.

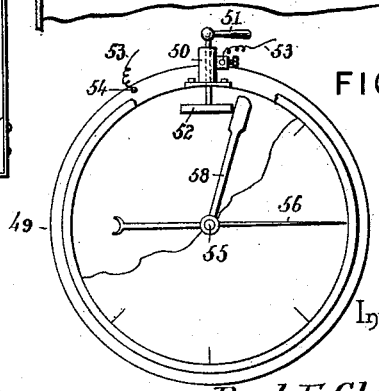
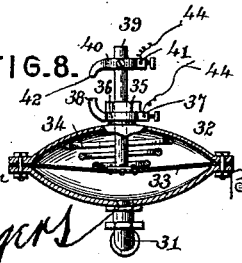


FIG. 8.



Witnesses

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UNITED STATES PATENT OFFICE.

PAUL EMERSON GLAFCKE, OF CHEYENNE, WYOMING, ASSIGNOR OF ONE-HALF TO THOMAS A. KENT, OF SAME PLACE.

PRISON-CELL, SAFE, OR OTHER DEPOSITORY.

SPECIFICATION forming part of Letters Patent No. 494,253, dated March 28, 1893.

Application filed October 28, 1892. Serial No. 450,200. (No model.)

To all whom it may concern:

Be it known that I, PAUL EMERSON GLAFCKE, a citizen of the United States, residing at Cheyenne, in the county of Laramie and State of Wyoming, have invented a new and useful Prison-Cell, Safe, or other Repository, of which the following is a specification.

My invention relates to improvements in prison-cells, safes, and repositories; the objects in view being to construct the same so as to indicate at a suitable station, remote or adjacent therefrom, any attempt at breaking into the same, wherein the wall thereof is punctured, cut or otherwise impaired.

With these main objects in view the invention consists in a prison-cell, safe, or other, repository having a double surrounding wall formed of metal plate, a filling of fluid under pressure, and an alarm mechanism connected with the space between the walls and adapted to be sounded by the decrease of pressure therein, as when said walls are punctured, cut, or otherwise impaired, as would be necessary to gain access to the interior of the structure.

Certain features of construction that are novel, and not herein broadly claimed form a part of the subject-matter of a companion application pending herewith, the same bearing Serial No. 427,089, and filed on March 30, 1892.

Referring to the drawings—Figure 1 is a front elevation of a prison-cell, safe, or repository constructed in accordance with my invention. Fig. 2 is a top plan of the indicator, the upper portion being broken away to expose the interior. Fig. 3 is a vertical transverse section of the cell, safe, or repository. Fig. 4 is a horizontal transverse section of the same. Fig. 5 is an elevation of the pump mechanism, gages, and alarm mechanism. Fig. 6 is an elevation of the gages, the pressure feed-pipes, and an equalizer that may be employed in lieu of those shown in Fig. 5. Fig. 7 is an elevation of one of the gages, the dial-face being partially broken away to expose the interior. Fig. 8 is a transverse vertical section through the diaphragm valve.

Like numerals of reference indicate like parts in all the figures of the drawings.

In practicing my invention I employ for the purpose of constructing the opposite side and back walls, the roof, and the floor, and if desired the door, inner and outer sheets of boiler iron or other metal, spacing the same apart by means of ordinary tie-bolts, and end filling strips, the edges of which are riveted to those of the walls, roof and floor. I have herein shown a construction of door slightly different from that of the remainder of the structure, though, as will be apparent in the following description, the door may be similarly constructed to the walls, roof, and floor.

1 designates the inner, and 2 the outer plates; 3 the tie-bolts that connect the plates; 4 the intermediate filling strips which are flanged at their edges and connected as usual, to the edges of the plates 1 and 2 by the series of rivets 5. By the use of these plates, as best shown in Figs. 3 and 4, a space is formed entirely around, above, and below the structure, said several spaces communicating.

As before stated, the door shown in Figs. 1, 3 and 4 may be constructed similar to the remainder of the structure, but in the present instance I have formed the same merely for the purpose of illustration, of a rectangular frame 6 of piping, the same having its opposite vertical sides connected by a transverse pipe 7. The space within the frame and above and below the pipe 7 is filled by series of cast-metal fluid-chambers or boxes 8, which communicate at their ends through the medium of pipes 9 with the pipe-frame 6. T-shaped couplings 10 extend from the hinge side of the door opening, but do not communicate with the space between the walls of the structure, and in these T-shaped couplings there is mounted the inner vertical branch or portion of the pipe-frame 6.

11 designates a tubular hollow staple that projects from the exterior side and front of the structure adjacent to the jamb thereof; and 12 represents a cylinder which by means of couplings 13 secures the same to the central transverse pipe 7 of the door-frame, one of said couplings, namely, the one toward the outer end of the cylinder being hollow and serving as a means of communication between the cylinder and the pipe 7. The inner end of the cylinder or that toward the free end of the door is provided with a gland 14, and through this gland from the cylinder there

extends the bolt 15 having a staple 16 at its free end for the accommodation of a pad-lock 17. The bolt is hollow and is provided at its inner end with a disk or head 18 designed to move in the cylinder, a coiled spring 19 being interposed between the disk or head and the inner end of the cylinder.

Referring more particularly to Fig. 5, 20 designates a cabinet which may be located at any suitable or convenient point, as for instance, in the warden's office, of a jail, in the cashier's office of a bank, &c., and in this cabinet there is located an ordinary force-pump 21, which is operated in the usual manner by a lever 22, and is connected by a pipe 23, having a cut-off or cock 24 and leading from any suitable source of fluid supply. From the pump leads the discharge-pipe 25, and from the discharge pipe lead the supply pipes 26 and 27, which as shown in Fig. 1 of the drawings, communicate with the wall-space and door respectively. Immediately above the discharge-pipe 25, the pipes 26 and 27 are provided with cut-offs or cocks 28, and above them are provided with waste-pipes 29 that may lead to the sewer or any other receptacle for waste fluid. These waste pipes 29 are likewise provided with cut-offs or cocks 30.

The pipes 27 are provided above the waste-pipes with branches 31, and in the present instance, upon these branches are mounted diaphragm valves 32 of ordinary construction. These diaphragm valves, as shown in Fig. 8, comprise the upper and lower semi-globular halves, between which is secured the diaphragm 33, a coiled spring 34 being interposed between the upper half and the upper side of the diaphragm so as to equalize or compensate for the upward pressure of the fluid agent against the under side of the diaphragm, as the same comes from the pipes 26 and 27. In the upper side of the valve that is mounted upon the pipe 27 which leads to the door of the structure, there is mounted a hollow stud or gland 35, and upon the same is swiveled a ring 36, having an electrical binding-post 37 and at an electrical contact-point 38. A piston 39 is mounted for reciprocation in the gland, and at its lower end is secured to the diaphragm. A collar or ring 40 is carried by the upper end of the piston, and is provided with a binding post 41, and an electrical contact-point 42. The ring 36 being swiveled may be turned so as to bring the contact-points 38 and 42 in vertical alignment, or throw them out of such alignment.

43 designates a pair of electrical conductors or wires, and to the same are connected branch wires 44, one of which leads to the binding post 41 of the ring 40, and the other of them leads to the binding post 37 of the ring 36, so that as will be obvious, when the diaphragm in the valve is unsupported by the pressure thereunder the spring in said valve will force the diaphragm downward, drawing the piston down therewith and effecting contact between the points 38 and 42, thus closing the circuit and sounding the alarm mechanism connected therewith. In the present instance I have shown an ordinary gong-bell 45 that may be located adjacent to the cabinet or at any other suitable point, and also the usual alarm-bell 46 supported in a tower 47 and found upon the exteriors of all jails, penitentiaries, and reformatories to indicate the escape of prisoners.

Tubes 48 extend from the pipes 26 and 27 above the diaphragm valves and support ordinary gages 49.

55 designates the arbor of the gage upon which the indicator or dial-hand 56 rotates.

Liquid or fluid may be employed as a filling agent for the pipes, walls, and door of the structure, but I prefer liquid for the reason that when under pressure and a vent occurs it escapes in a body and so would indicate its escape instantly, whereas a fluid or vapor would escape gradually.

In operation the cocks 30 are closed and the cocks 24 and 28 opened so as to admit the agent to the walls, door, and pipes of the structure and system. When these have become filled the pump 21 is operated so as to put the same under pressure and thus the gages indicate the number of pounds of pressure. The cock 24 is then closed and the charging of the structure is completed. It will be seen that the agent acting on the head 18 of the bolt will force the bolt into the keeper or staple 11, and as an additional preventive the pad-lock 17 may then be locked in its position. The locking is now completed and it will be seen that if any part of the walls, door, bolt or pipes is cut, punctured, or any vent whatever occurs the agent escaping will immediately make its presence known, by indicating upon the gage the loss of the agent and at the same time withdrawing its support from under the diaphragm of the valves 32 whereby the springs therein will force the diaphragms down carrying with them the piston 39 and bring the contact points 42 into contact with the contact points 38, thus completing the circuit and sounding the alarm-bell continuously until either the pressure in the pipes and structure is restored or the ring 36 rotated so as to break the electrical connection between the points 42 and 38.

The diaphragm valves 32 perform another function aside from their alarm sounding abilities, namely, as equalizers. That is to say, should the fluid in the pipes and structure be expanded by a change of outside temperature to a greater degree than the pipes and metal of the structure, such expansion will be compensated for, as the excess may arise in the valves forcing up the diaphragms as will be apparent.

If desired I may omit the diaphragms and employ in connection with the gages an alarm to be sounded by the gages, though when this form of equalizer is employed, I prefer to employ the alarm mechanism in connection with the equalizers. I will proceed to describe an

electrical alarm device that may be employed in connection with the gages when the alarm mechanism is not located upon and actuated by the equalizers. The gage-casing is provided with two binding-posts 50 and 54, the former being bored vertically. A rotatable switch 51 is mounted in the bore of the post 50 and is provided at its lower end within the casing with a semi-circular or semi-elliptical contact plate 52. In rear of the dial face of the gage an armature 58 is carried by the indicating hand 56 so that by turning the switch so that the convexed side of its plate 52 is toward the dial, the same will be brought into the path of the armature, and when the indicating hand of the gage moves the circuit is established by the contacting of the armature with the plate. Electrical conductors 53 lead from each of the posts 50 and 54 to the electrical conductors 43.

When it is desired to gain access to the interior of the structure, the same may be done only by lowering the pressure in the pipe 27 in the bore. This is accomplished by opening the cock 30 of the waste-pipe 29 of the pipe 27 and permitting the agent to escape therefrom. In order to prevent sounding the alarm in this case, the ring 36 is partially rotated so as to throw the contact-points out of alignment, or if the electrical alarm mechanism is carried by the gage, the switch 51 is operated in the manner heretofore described so as to swing the plate 52 out of the path of the armature 58. This lowering of the pressure creates in the cylinder 12 of the lock a partial vacuum and this vacuum aids the spring 19 in withdrawing the bolt from the hasp or staple 11, the padlock 17 having been previously removed. By closing the door and re-establishing the pressure the locking is completed.

In Fig. 6 I have illustrated a modified construction of equalizer, whereby the diaphragm-valves may be omitted, and in such instance it becomes necessary to employ the electrical alarm mechanism in connection with the gages. This modification simply consists in the provision of the well-known air-chamber 60 upon the pipes 26 and 27. This air-chamber serves as an equalizer, and compensates for any expansion of the agent.

From the foregoing description, in connection with the accompanying drawings, it will be readily seen that I have provided a cell or safety compartment designed to be used in prisons, banks, reformatories, and repositories of various kinds, wherein it is impossible to gain access without ringing the alarm and notifying the authorities of such fact, or any attempt thereat involving a puncture or breakage of any kind, in the door, roof, bottom, or walls.

Having described my invention, what I claim is—

1. In a structure of the class described, the hollow walls having a door-opening, a hollow door communicating therewith and hinged thereto, combined with means for supplying liquid under pressure to the walls and door, a diaphragm-valve connected with the liquid supply means, and an alarm mechanism adapted to be operated by said diaphragm-valve, substantially as specified.

2. In a structure of the class described, the walls thereof, consisting of inner and outer plates forming intermediate spaces communicating with each other, a hollow door, hollow hinges communicating only with the intermediate spaces of the door and cell, means for supplying a fluid agent under pressure to the walls and door, and an alarm mechanism operated by a reduction of pressure in the walls or door, substantially as specified.

3. In a structure of the class described, the walls thereof consisting of inner and outer metal-plates, tie-bolts connecting the plates, flanged filling strips between the edges of the plates, rivets connecting the flanges and edges of the plates, means for supplying a fluid agent under pressure to the space between the plates, and an equalizer connected with the said supplying means, substantially as specified.

4. In a structure of the class described, the walls thereof consisting of inner and outer metal-plates, tie-bolts connecting the bolts, flanged filling-strips between the edges of the plates, rivets connecting the flanges and edges of the plates, means for supplying a fluid agent under pressure to the space between the plates, an equalizer connected with the said supplying means, and an alarm mechanism operated by a reduction of pressure in the walls, substantially as specified.

5. In a structure of the class described, the combination with the hollow walls and door, of pipes leading thereto, means for supplying a fluid agent under pressure to the pipes, means for drawing off the fluid from the pipes, tubes extending from the pipes, diaphragm-valves mounted on the tubes, a contact-point on the upper side of the valve, a piston extending from the valve, a spring for depressing the piston, a contact-point carried by the piston, electrical conductors, alarm-bells connected therewith, and wires leading from the contact-points to said electrical conductors, substantially as specified.

6. In a structure of the class described, the combination with the hollow walls and door, of pipes leading thereto, means for supplying a fluid agent under pressure to the pipes, means for drawing off the fluid from the pipes, tubes extending from the pipes, diaphragm-valves mounted on the tubes, a ring swiveled on the valve and provided with a contact-point and binding-post, a piston passing through the ring and valve and connected with the diaphragm, a spring for depressing the piston and valve, a ring mounted on the piston and provided with a binding-post and contact-point, electrical conductors,

alarm-bells connected therewith, and wires leading from the conductors to the binding-posts of the ring, substantially as specified.

7. In a structure of the class described, the combination with the hollow walls and door, of the fluid agent supply-pipes leading thereto, means for forcing the agent through the pipes, diaphragm-valves connected with the pipes, alarm mechanism operated by the valves, and gages located on the pipes above the valves, substantially as specified.

8. In a structure of the class described, a door comprising a hollow frame and an intermediate filling of hollow boxes with connecting pipes arranged between the boxes and frame, and means for forcing fluid therein, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

P. EMERSON GLAFCKE.

Witnesses:
JOHN H. SIGGERS,
A. J. JONES.