(No Model.) 2 Sheets—Sheet 1.

P. E. GLAFCKE.

PRISON CAGE OR CELL.

No. 494,252. Patented Mar. 28, 1893.

Fig: 1.

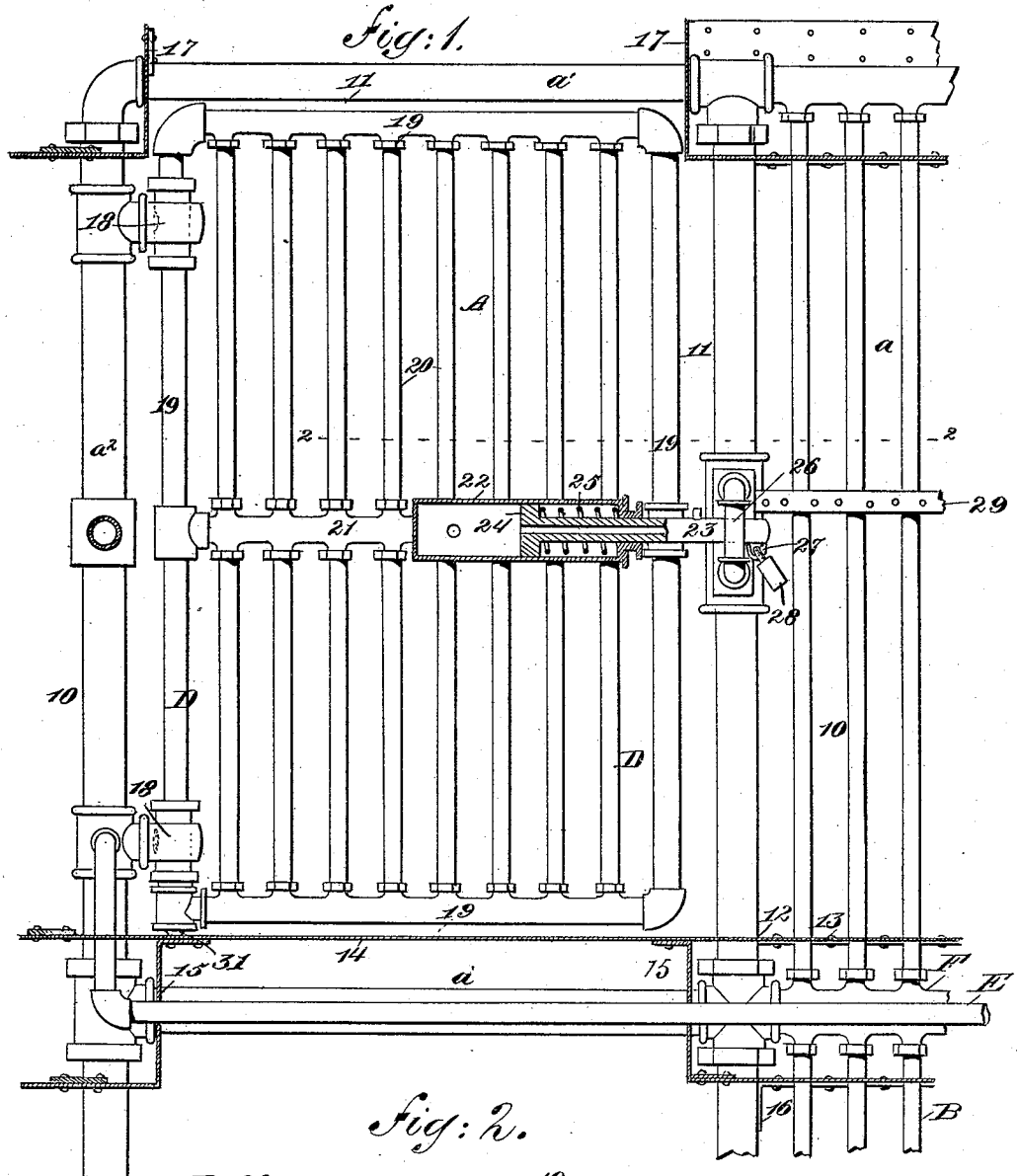
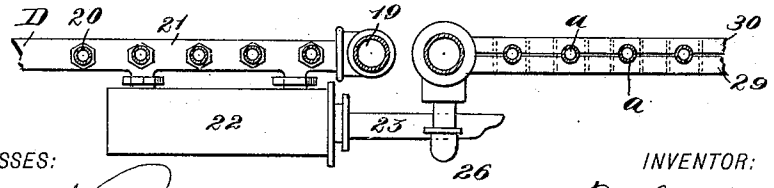


Fig: 2.



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(No Model.) 2 Sheets—Sheet 2.

P. E. GLAFCKE.

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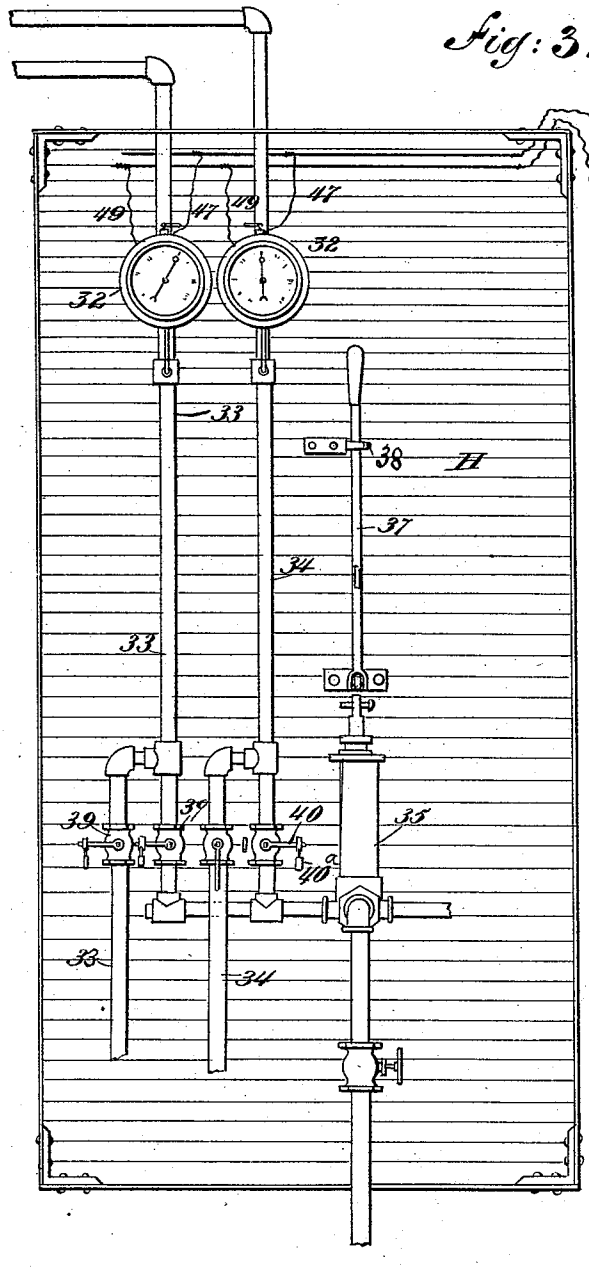
Fig: 3.



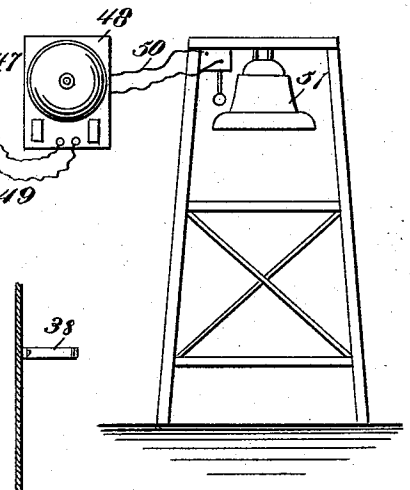


Fig: 4.

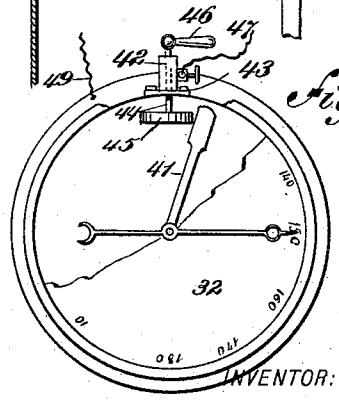
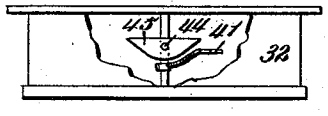


Fig: 5.

Fig: 6.



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UNITED STATES PATENT OFFICE.

PAUL EMERSON GLAFCKE, OF CHEYENNE, WYOMING.

PRISON CAGE OR CELL.

SPECIFICATION forming part of Letters Patent No. 494,252, dated March 28, 1893.

Application filed March 30, 1892. Serial No. 427,089. (No model.)

To all whom it may concern:

Be it known that I, PAUL EMERSON GLAFCKE, of Cheyenne, in the county of Laramie and State of Wyoming, have invented a new and useful Improvement in the Construction of Prison Cages or Cells, of which the following is a full, clear, and exact description.

My invention relates to an improvement in the construction of prison cages or cells, and has for its object to utilize hydraulics and electricity as forces in connection with the construction of prison cages and cells to give an alarm the moment that any portion of the cell or cage, or any lock or bolt connected therewith is tampered with to any injurious degree, and thereby prevent serious damage to the cell or cage, and also prevent the escape of the prisoner or prisoners.

Another object of the invention is to construct the prison cages or cells and the locks used in connection therewith in such a manner that they will not only be safe but also simple and economic.

It is another object of the invention to provide means whereby the factors adapted to give an alarm may be expeditiously and conveniently brought under control, and silenced when it is desired to open or to close a cell or cage door, and whereby also the factors may be readily set so that an alarm may be given within the prison, within the prison yard, without the yard, or at any place or places deemed desirable, when any part of such cage, cell or lock is being mischievously tampered with.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of a portion of a cell or cage constructed in accordance with my invention, and also illustrating a portion of the cell or cage forming one of a lower tier. Fig. 2 is a horizontal section taken practically on the line 2—2 of Fig. 1. Fig. 3 represents the interior of a station containing the pumping apparatus and the gages, and Fig. 3 further represents alarm mechanisms and the connections between the gages and said mechanisms. Fig. 4 is a partial vertical section taken through the station, illustrating a portion of the pump in side elevation. Fig. 5 is a front view of one of the gages, the dial being partly broken away; and Fig. 6 is a plan view of the gage, a portion of the casing being broken away.

The cell or cage is constructed at its front, back, sides, bottom and top of a series of tubes 10, of cast iron, case-hardened steel, or wrought iron, the pipes or tubes being preferably made so as to break when a predetermined amount of pressure is brought to bear thereon. The object of having the piping break at a certain excessive pressure is to prevent the application of freezing mixtures to the exterior or interior of the pipes if it is at all possible to apply or introduce such mixtures, as the pipes are adapted to contain water at all times, and the introduction or application of such freezing mixtures would cause expansion of the water by freezing, but if the pipes are made to break under the stress of an excessive amount of pressure an alarm would be sounded, as in this system of constructing prison cells and cages the moment that the pressure of water in the tubes or pipes of the cells or cages is reduced to a predetermined degree, the water through the medium of the gages connected with the pipes causes an alarm to be sounded upon any approved device. Thus it is evident that if one of the tubes or pipes should be broken by the introduction or application of a freezing compound therein or thereon, the pressure of the water in the tube or pipe would be reduced or diminished, and an alarm would be sounded as quickly as though the pipe or tube had been sawed through.

The cages or cells may be of any approved or desired shape; that shown in the drawings is practically rectangular, and at each side of the door opening 11 the tubes or pipes are made preferably much larger than at any other point in the cage or cell. The upright, intermediate pipes *a* in the construction of the main body of the cage or cell, are connected at top and bottom with supply pipes *a'*, which are larger than the intermediate pipes in diameter, and these top and bottom

supply pipes are connected by corner pipes a^2 of practically the same diameter. The pipes may be coupled together in any manner known in the art of plumbing, and the horizontal tubes or pipes at the top connect with the corner and side tubes or pipes a^2 and a', the said top tubes not being shown in the drawings. The pipes are preferably made of such material that they will break under great pressure, before they can be sprung apart to any extent.

In order that the tubes cannot be bent, if placed wide apart, to such a degree as to admit of the passage of the body of a prisoner, the pipes are tied together at the bottom by strips 12 of metal, recessed to receive the pipes, as shown in Fig. 1, clamping them from opposite sides, and the two strips or plates are connected by means of bolts 13, or the equivalent thereof; when bolts are employed the nuts are located beneath the plates so as to be out of the reach of the occupant or occupants of the cell or cage.

The floor 14, consists preferably of sheet metal and may be laid in any suitable or in the ordinary manner.

In Fig. 1, beneath the flooring of the upper cell A the pipes are shown as continued downward to form a cell B of a lower tier; and the connections of the pipes of the two cells are inclosed by metal casings 15, connected with the bottom of the upper cell, which forms a portion of the roof or top, of the lower cell, the said casing being carried downward from the bottom of the upper cell beneath the couplings of the pipes to constitute a continuation of the ceiling of the lower cell; and the casing 15, in this event is so constructed that when used in connection with braces 16, shown at the right in Fig. 1, the pipes at the upper portion of the lower cell will be horizontally braced or strengthened. The same construction of the casing is shown in connection with the upper portion of the upper cell, and is designated as 17 in Fig. 1, the casing serving as an upper brace for the vertical pipes or tubes of that cell; and if in practice it is found desirable instead of the top of the upper cell being made of a series of tubes or pipes the top may be made solid and from sheet iron or equivalent material. Likewise if in practice it is found desirable, tubes may be carried in series over the upper portion of the lower cell. Each cell is provided with a door or closure D, fitted in the opening 11 and hung to one of the vertical larger-sized pipes, preferably to one of the corner pipes a^2, as shown in Fig. 1. The hinges 18, employed, are of such character that they are adapted to conduct water from the tube of the body of the cell with which they are connected to the tubes of the door, as the door is formed of a frame 19 of connected tubes and a series of intermediate tubes 20, either horizontally or vertically arranged.

The door hinges 18, are simply an adaptation of the ordinary plug valve now in use, or of the usual packed valve; but instead of the outlet being where it ordinarily is in the construction of such valves it is changed so as to have the outlet at the top and bottom of the plug in the valve, and in this manner water is conveyed to the tubes forming the door.

Each tier of cells and each and all the doors leading into the cells, each cage front and each door affording entrance into said cage, may have an independent circulation of water, and this form of construction is illustrated in Fig. 1 and is the preferred form, although if in practice it is found desirable a continuous circulation may be had through all of the tubes of the cells or cages including their doors and bolts. But this latter construction has many disadvantages, and therefore an independent circulation for individual cells is preferably adopted. Such independent circulations are established by the usual system of blind gaskets and blind joints well known to the plumbers' trade. Therefore, when a break occurs its location may be readily determined, and the water can be easily turned off from such section, if necessary, for the time being.

The water is supplied to the door D through a pipe E, illustrated in Fig. 1; and a second pipe F supplies the water to the body of the cage, while a connection may be made between the body and the door and a sewer or other offtake in any suitable or approved manner, the connection being a valved one.

Sundry of the vertical tubes 20 of the door are connected by a coupling 21, shown in Figs. 1 and 2. This coupling is in direct communication with the frame portion of the door and also with the bolt casing 22 attached to the door. In this bolt casing, the bolt 23, is held to slide the said bolt being tubular but closed at its outer end, and the inner end of the bolt is shaped to form a piston head 24, having frictional engagement with the walls of the casing 22. Around the bolt, within the casing a spring 25, is coiled, bearing against the inner face of the casing head and against the piston head 24 of the bolt. The spring is adapted to exert tension against the normal pressure of the water in the cylinder or casing 22 of the bolt after excessive pressure has been removed from the pipes by the opening of proper stop cocks or valves in a cabinet to be hereinafter described, in which cabinet the admission of water to the parts of the cell is regulated, and also the amount of pressure to be given to the water.

The bolt 23, is adapted to pass through a keeper 26, also tubular and adapted to receive and contain water, and in order that the bolt may not be forced from the keeper the bolt is preferably provided with an eye 27, to which eye a pad-lock 28, may be attached, as shown in the drawings.

In order that the tubes of the body of the cage or cell may be braced and strengthened intermediate of their ends in a manner to prevent them from being sprung, the said tubes

are inclosed between two bars 29 and 30, as shown in Fig. 2, the said bars being recessed to receive tubes or pipes and connected by bolts or other form of fastening devices. When bolts are employed the nuts of the bolts are at the outer side of the cage or cell.

The hydraulic lock above described may be used in place of the old-style safety locks on the old-style of cell fronts, in which event they are attached to the walls between the doors and are fed by a pipe from above. Each lock may be fed by an independent supply pipe, rendering each lock independent of the other if desired.

The weight of the door of the cell is prevented from coming directly upon the valve hinges by the insertion of a plug 31 in the bottom of the door at the hinged portion of the frame, the said plug being adapted to rest upon and turn in a socket in the floor, if desired, whereby the floor is made to support the bulk of the weight of the door.

Each supply pipe for each portion of the cage door or cell is provided with a gage 32 of any approved construction and adapted to record hydraulic pressure, as shown in Fig. 3, in which the upper section of pipe 33 is adapted for connection with the supply pipe E of the door and the upper section of pipe 34 for connection with the supply pipe F of the body of the cage or cell. These gages are represented as contained in a cabinet H, and two sets of pipes and two gages are there shown, one gage being connected with a pipe and recording the pressure upon the door and lock, the other gage being adapted for use upon the cell front, as shown in the drawings. All of the pipes leading to the gages are connected with a force pump 35, through the medium of which pump, water is supplied to the different portions of the cage door or cell. The continuation of pipes 33 and 34 downward from the waste valves on the left hand pipe of each set in the lower part of the cabinet represents pipes leading to the sewer. Upon opening the waste cocks attached to the said waste pipes, the pressure in the cage or door is reduced through the medium of its supply pipe. When the pipes are to be filled the waste cocks are closed and the feed cocks are opened.

The piston 36 of the pump is preferably made detachable from the handle 37, which handle is fulcrumed upon the wall of the cabinet. Thus the handle 37, when disconnected from the pump piston may be carried upward and caught by a suitable latch 38, by which it is held in a vertical position, enabling the cabinet to be quite narrow and the door thereof to be closed. After the water has been permitted to run into the portions of the cells or doors and fill the tubular portions of its structure, the desired pressure is given to the water in the tubes or pipes of the cell or door by manipulating the pump 35. The pipes 33 and 34 are each provided with a feed valve 39, the valves being located within the cabinet, and the valves are preferably manipulated through the medium of lever handles 40. After the requisite pressure has been secured throughout the piping, through the medium of the pump, the feed valve attached to the supply pipe leading to such piping is closed and locked, the lever handles being secured by a pad-lock 40^a, or other approved form of lock, and held in that position, as shown in Fig. 3.

To the center pin of each gage 32 what I denominate a follower 41, is secured, this follower being preferably made from a thin elastic or spring metal, and the follower may be set wherever it may be desired. A binding post 42, is located at the top of each gage, properly insulated therefrom by insulating material 43, as shown in Fig. 5; within the post a spindle 44, is held to turn, which extends downward within the gage a proper distance, and to the inner end of this spindle a contact plate 45, is secured, preferably consisting of a half circular piece of metal, a top view of which is shown in Fig. 6; and at the top or upper end of the spindle 44 a handle 46, is secured.

When the piping to which the gage is attached is to be filled, the handle fastened to the spindle is turned to the left, as illustrated at the right-hand gage of the cabinet in Fig. 3, whereupon the half-circular portion of the contact plate is turned in such a position toward the rear that it will not engage and form an unnecessary contact with the follower 41, as the hand turns to indicate the rising pressure. When the desired pressure has been secured, the handle attached to the spindle is turned to the right as illustrated on the gage at the left-hand side of the cabinet, whereupon the half circular portion of the contact plate is turned toward the front of the gage; so that when the hand turns to indicate a lower pressure, this movement of the hand will also revolve the spindle to which the follower is attached and carry the follower in engagement with the circular portion of the contact plate 45, and, as the post 42 is connected by a wire 47 with an alarm bell 48, and a second wire 49, connects said bell with the casing of the gage, the bell being in an electric circuit, the moment that the follower 41 engages with the contact plate 45 the circuit is closed and an alarm is given. Wire connection 50 may also be had with a bell 51 of any approved construction and located some distance from the prison or within the prison grounds.

In operation, after the proper hydraulic pressure has been secured in the tubes of a cell or cage, the pump 35 is stopped and the contact plate 45 is set in such manner that the moment said pressure is reduced it will engage with the follower 41 of the gage recording the pressure in that cell. In the event that a prisoner should saw into one of the tubes, or into the bolt, or the bolt casing, the water escaping will reduce the pressure in

that portion of the cage or cell cut and consequently the hand of the gage will turn to indicate the reduction in pressure, the circuit will be closed and an alarm will be sounded. In the event, for instance, it is desired to open a door to admit or to discharge a prisoner, the water is drawn off from the door after having turned the contact plate 45, of the gage connected with the door, out of circuit. The spring 25 of the bolt will now act to automatically force inward the bolt and the door may be opened. When the door has been again closed water is once more supplied to the tubes of the door, and as proper pressure is obtained the water acting upon the bolt of the door will force it through its keeper to its locked position; and after the proper pressure has been obtained and the valve 39 set, the contact plate 45, is reset to engage with the follower 41 when occasion may demand.

In Fig. 3, the set of pipes 33, which feed the door and lock, are supposed to have a full pressure on the alarm apparatus and the alarm apparatus is set to announce a loss of such pressure. With reference to the set of pipes 34, the opposite is the case, as the water has been allowed to run off into the sewer, as shown by the open waste cock. All pipes running toward the bottom of the cabinet are waste pipes and all the pipes running toward the top from the pump are supply pipes.

It will be observed that a cell or cage constructed as above set forth is exceedingly safe, and that it is an impossibility for a prisoner to escape therefrom without sounding an alarm; further, that the front only of a cell need be constructed in the manner above described, and that a guard formed of tubes controlled by hydraulic pressure may be made to surround the grating of any cell or any portion of any cell.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a prison cell, cage &c. a hollow wall or grating, consisting in a series of vertical and transverse connected pipes, means for supplying a fluid under pressure to the said tubular wall or grating, and an alarm operated by a reduction of pressure due to the breaking, leaking or opening of said wall or grating, substantially as set forth.

2. In a prison cell, cage &c., a hollow wall or grating, consisting in a series of connected pipes and having a door opening, a tubular keeper at one side of the opening and communicating with the said pipes, means for supplying a fluid under pressure to the said pipes and keeper, a door closing said opening and having a bolt to engage the keeper, and an alarm mechanism operated by a reduction of pressure in the wall or its keeper, substantially as set forth.

3. In a prison cell, cage &c., a hollow wall or grating, consisting in a series of connected pipes, and having a door opening, a hollow door formed of a series of connected pipes, means for supplying fluid under pressure to said door and hollow wall or grating, alarm mechanism connected with said wall and door and actuated by the breaking, or leaking of said pipes or opening of the door, substantially as set forth.

4. In a prison cell, cage &c., a hollow wall or grating formed of a series of connected tubes and having a door opening bounded by tubes, a hollow door for said opening, formed of connected pipes and having a tubular or valved hinge connection with one of the pipes at said opening, a fluid pressure mechanism connected with the hollow wall and its door to fill the same with fluid under pressure and an alarm actuated by a diminution of pressure in said piping substantially as set forth.

5. In the construction of prisons, a cage or cell constructed of a series of tubes arranged to admit of a circulation of water in them, a door of like construction and having tubular or valved hinges connecting it with the body of the structure, gages connected with the door and with the body of the structure, an alarm device, and an electric connection between the gages and the alarm, substantially as and for the purpose specified.

6. In the construction of prisons, a cell or cage the body of which comprises a series of tubes connected to admit of water circulating through them, a door of similar construction having a tubular or valved hinge connection with the body of the structure, a hydraulic bolt carried by the door, pressure gages connected with the door and with the body of the structure, an apparatus for creating water pressure also connected with the structure and with the door, an alarm mechanism, and an electric connection between the alarm mechanism and the gages, substantially as and for the purpose set forth.

7. The combination with a hollow or tubular door, closure, or grating having a tubular bolt casing communicating with its interior, and a bolt provided at its inner end with a piston fitting said casing, of a fluid pressure mechanism for charging the door and the bolt casing with fluid under pressure; the fluid being adapted to project the bolt, a valve for exhausting the fluid to lessen the pressure and permit retraction of the bolt, and an alarm actuated by the escape of fluid from the closure or grating or its bolt case due to tampering with the tubular grating or its bolt casing, substantially as set forth.

8. The combination with a hollow or tubular door, closure, or grating having a tubular bolt casing communicating with its interior, and a tubular bolt closed at its outer end and provided at its inner open end with a piston fitting the casing, of a fluid pressure mechanism for charging the door, closure, or grating, the bolt casing and the bolt with fluid under pressure; the fluid being adapted to project the bolt, a valve for exhausting the fluid to lessen the pressure and permit retraction of the bolt, and an alarm actuated by escape of fluid

from the door, closure, or grating, the bolt case, or bolt due to tampering therewith, substantially as set forth.

9. The combination with a hollow or tubular door, closure, or grating for cells &c, having a tubular bolt casing communicating with its interior, and a spring retracted bolt provided at its inner end with a piston fitting said casing, of a fluid pressure apparatus to charge the hollow or tubular closure or grating and project its bolt, a valve for exhausting the fluid to lessen the pressure in the bolt cylinder and permit the spring to retract the bolt when the closure or grating is to be opened by an authorized person, and an alarm operated by exhaust of fluid due to tampering with the closure or grating, substantially as set forth.

10. The combination with the tubular structure, and a fluid pressure apparatus connected therewith, of the gage indicating the pressure in said structure, and an alarm electrically connected with the said gage and actuated from its pointer axis or center pin, substantially as set forth.

11. The combination with the fluid pressure mechanism, and the tubular structure charged therefrom, of a fluid pressure gage having a follower or arm on its pointer axis or pin, a contact piece in the gage casing and provided with a spindle extending to the outside of the casing and having a handle to move said piece into and out of the path of the follower or arm, an alarm, and the electrical connections, substantially as set forth.

12. The combination with a prison cell, cage &c., the walls of which are formed of connected pipes, of a supply pipe leading from the office or other suitable point to said pipes, a fluid pressure apparatus at the office end of the pipe to force a fluid therethrough into the walls, a valve in the pipe adjacent to said apparatus, a valved exhaust pipe leading from said supply pipe above its valve, a fluid pressure gage connected with said supply pipe above the said valves, electrical contact devices actuated from the pointer axis of the said gage, and an alarm electrically connected with said devices, substantially as set forth.

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