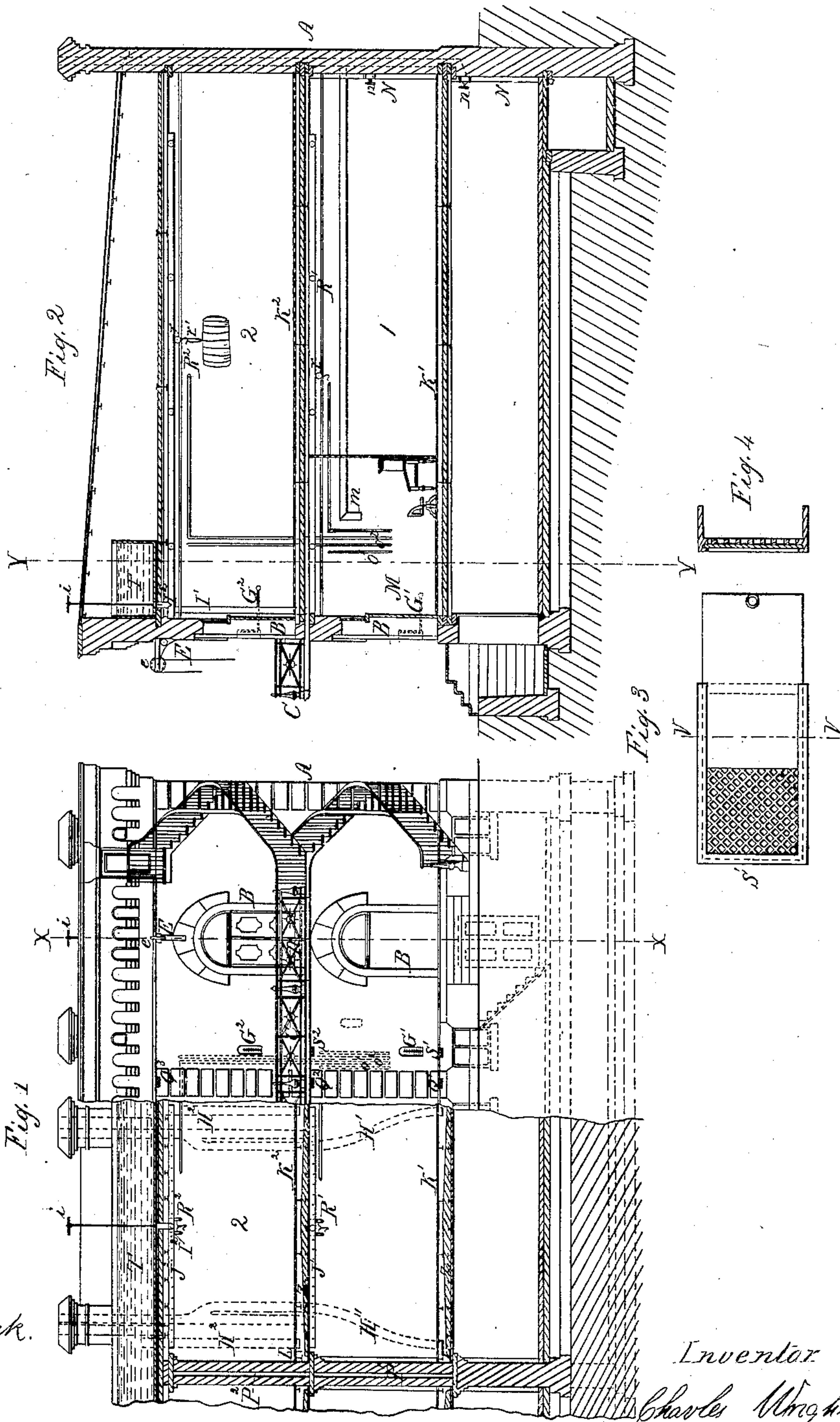


C. Wright

Fire-Proof Building.

N^o 62,516.

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Witnesses
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CHARLES WRIGHT, OF NEW YORK, N. Y.

Letters Patent No. 62,515, dated February 26, 1867.

IMPROVEMENT IN STOREHOUSES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CHARLES WRIGHT, of city and county of New York, and State of New York, have invented certain new and useful Improvements in Storehouses, applicable also to vessels; and I do hereby declare that the following is a full and exact description thereof.

My improvements relate mainly to means for guarding against the spreading of accidental fires, and means of discovering and extinguishing the same, and for conveying away water, transporting goods, etc., in combination therewith. My improvements are designed mainly for large warehouses constructed of brick or analogous material, but they may be applied to iron buildings, and some of them may apply to iron vessels made in compartments, or even to wooden buildings and wooden vessels made in compartments. I will first describe what I consider the best means of carrying out my invention in connection with a warehouse having but few compartments, it being understood that it may be applied in a similar manner to warehouses having a greatly increased number of apartments, or to vessels having several decks and several water-pipe partitions. The accompanying drawings form a part of this specification.

Figure 1 is a front view, partly in section, of a storehouse constructed according to my invention. The section is on the line Y Y in fig. 2.

Figure 2 is a vertical section on the line X X in fig. 1.

Figure 3 represents on a large scale a method of opening and closing the valves S' Q', etc.

Figure 4 is a section on the line V V in fig. 3.

Similar letters of reference indicate like parts in all the figures.

The drawings represent the novel parts, with so much of the other parts as is necessary to indicate their relation thereto.

A indicates the exterior walls of a warehouse having several floors and several partitions on each floor, forming a number of separate compartments, which will be distinguished by numerals. M is the office for the person or persons in charge of the building and of the goods stored therein, while 1 and 2, etc., form the storage compartments. B, etc., are the doors, one door opening into each apartment. C C are balustrades or elevated walks. D D are gates or movable portions of the hand-railing in front of such walk. This latter may be lowered, or, when goods are to be introduced into it, removed from their several compartments. E E, etc., are projecting brackets of iron, or other material, carrying a pulley, e, by which goods may be conveniently hoisted from the street or canal below by the aid of ropes operated by hand, or any convenient power, not represented. The gates or movable portions, D, in the hand-railing are exposed so as to make the railing complete whenever the act of introducing or removing goods from a compartment is completed and the door of the compartment is securely locked and the key conveyed to the office M. My invention provides for a very complete examination of the buildings with regard to the presence of fire therein, without the necessity for the watchman's having any means of entering any of the compartments. F is a tank of water extending over the whole or any portion of the top of the building, kept filled with water by the aid of a steam engine, or other suitable power, so as to afford a supply sufficient to extinguish the fire when it shall be discovered in any of the compartments. G¹ G², etc., are thermometers placed in the front walls of the building, one in front of each of the compartments. The graduated plate is constructed and arranged as usual, but the thermometer tube is larger, so as to make its indications more readily visible, and the lower portion of the tube is extended at right angles to the graduated scale and reaches through the wall into the compartment, being there defended from accidental injury by a grating, or other suitable device, which allows free access of the air. The moment the air of the apartment becomes materially raised in temperature the fact is indicated by the thermometer and may be observed by the watchman on the outside, who is required to complete his rounds at regular intervals of half an hour, more or less. H¹ H², etc., are flues leading separately from each compartment to the top of the building, where they discharge either directly into the atmosphere or into a common flue. Each of these flues is provided with a thermometer similar to that represented by G, and which the watchman may examine in a similar manner. In addition to this safeguard each flue discharges heated air in the face of the watchman in case of fire commencing in its compartment. It is easy, therefore, for the watchman who shall faithfully complete his rounds to obtain very positive indications of the fire before it has acquired sufficient headway to be manifested in any ordinary manner.

It may not be necessary for the watchman, particularly in severe weather, to visit the top of the flues so long as the indications from the thermometers in the front of the building are perfectly uniform and safe; but if the indication by any thermometer excites suspicion, without rendering it absolutely certain that there is an increase of heat in the apartment, the watchman immediately repairs to the top of the building and examines the indications from the corresponding flues. I^1, I^2 , etc., are pipes controlled by valves i leading from the bottom of the tank F to each of the compartments. J^1, J^2 , etc., are perforated distributing pipes, arranged in the top of each compartment, and adapted to receive water through the corresponding pipes I from the tank F , and to shower it uniformly over the whole surface of the apartment. The moment the watchman suspects the presence of a fire in a given apartment, as for example, the compartment 1, he makes the fact certain by examining the indications from the flue H^1 , and then immediately opens the valve i , and admits a torrent of water from the tank F through the pipe I into distributing pipes J . This wets thoroughly and uniformly the whole contents of the apartment 1, without affecting in any way the contents of the adjacent compartments. The water may be allowed to flow in this manner in sufficient quantities to actually fill the entire compartment, if it shall be safe and advisable to do so. In ordinary structures the strength of the walls might not be sufficient to resist such a pressure; but it will in most cases be sufficient to introduce enough water to cover the floor to the depth of a few feet.

I will now describe the means I provide for the discharge of the water. K^1 , etc., are gratings which form the floor of the building, and which form easy channels leading from the centre of each compartment to the gutters L , which extend along the sides. The spaces between the gratings K^1 , etc., allow the water to flow from every portion of the floor to the gutters, and the gutters allow it to flow along the sides to the scuppers, through which the water flows freely away through the pipes N . It will be understood that the grates K^1 , and the gutters L , and pipes N , are provided for each compartment. The flooring below the grates K^1 is filled up with concrete, Z , so as to form a mass which is impervious to water, and is a good non-conductor to prevent the passage of heat from one compartment to another in a vertical direction. The upper surface of the floor is inclined, as represented, in order to allow the water to flow off more freely. It will be recognized that the damage to goods, in consequence of thus wetting them, may, in some cases, be very serious; but it will be observed that my invention provides for wetting only the compartment or apartments in which the fire is discovered to have actually commenced, and that the fire may, in ordinary cases, be extinguished without any necessity for opening the doors and allowing any opportunities for theft. The accumulation of water in a compartment to any desired depth above the floor, may be regulated by prolonging the introduction of water from the tank above, and by delaying to open the discharge valve n , which controls the flow of water through the discharge pipe N . There is a control-valve, n , in each discharge pipe, operated in any convenient manner, easily accessible to the watchman. O^1, O^2 , etc., are pipes forming an additional means for ascertaining the presence of fire. These pipes lead from the several compartments to the office M . The smell of fire, as also the increase of temperature due to the presence of fire in any compartment, will be communicated through these pipes O^1, O^2 , etc., and be recognized in the office, especially if, as I prefer, there be a capacious exhausting flue, m , which will be readily understood, leading from the office to the top of the building, in which the upward draught is maintained by a small fire, or by gas burners. In cold weather the draught will be maintained by the ordinary means employed for warming the office, and the access of air into the office being retarded by closed doors and windows, there is a continuous and uniform draught through the office from each of the compartments through the small pipes O . In cases where, in spite of these precautions, the fire shall obtain great headway in any compartment, so as to heat the walls, I provide for retarding the transmission of heat through the walls, by making the walls hollow, and allowing cool air to circulate freely through the interior. The cavities in the walls are designated P^1, P^2 , etc. They may be of any thickness, and may be duplicated to any extent desired. Q^1, Q^2 , etc., are valve-openings, controlled by the watchman, which admit cool air from the exterior to flow into and circulate through the cavities P^1, P^2 , etc., and be discharged through suitable flues at the top, not represented. If one side of the hollow wall P^1, P^2 , etc., is heated, the heat transmitted through the same will be in a great measure absorbed or carried away by the cool air, leaving but a small portion to be carried through to the other side and into the next compartment. R^1, R^2 , etc., are suspended railways, leading from the doors B^1, B^2 , etc., backward through the whole extent of the respective compartments. On these traverse wheels r , with suspended tackle r^1 , by which the goods may be slung up and transported with little resistance through any distance in the compartment. This is of great use in connection with the hoisting pulleys E, e at the front. S^1, S^2 , etc., are grated openings controlled by the attendant, which admit cool air directly into the compartments. These and the other openings, if any, leading into the compartment, should be closed tightly to exclude air, whenever the fire is discovered to have commenced within; but they should, in most cases, be kept open, and allow the draught of air to come in and circulate through the compartments, in order to make a proper ventilation, and to convey away the heat which is generated by the chemical changes in some classes of goods. This draught insures an active upward current through the flues H , and prevents the accumulation of heat in the compartment, which, with some classes of goods, of which the oil known as nitro-glycerine is believed to be a marked example, might take place by their decomposition, and cause or induce spontaneous combustion.

In the drawings I have represented two sets of flues, H, H^1 , etc., for ventilating the compartments and conveying information to the watchman, as described. The number is not material, and may vary according to circumstances. One will in most cases suffice. The uptake flue m , which serves to create a draught to assist the air in passing from the different compartments, through the tubes O, O^1 , etc., into the office M , may, in most cases, be made of sheet iron or ordinary stove pipe; but safety and economy may require that it be provided with a jacket to prevent radiation of heat. In addition to the tubes O, O^1 , etc., for conveying information to the office concerning the conditions of the air in the several compartments, I propose, in cases which will justify

the expense, to employ electric conductors arranged in connection with a suitable battery in the office, and with an automatic alarm of any approved construction in the several compartments, so that when a fire occurs the alarm will convey an electric signal through the wires, and strike a bell or otherwise make the fact known in the office. The conducting wires may be insulated with a coating of gutta percha or the like, and may extend along the interiors of the air-tubes $O O^1$, etc. The air-tubes will therefore perform two functions, one the conveying of currents of air from the several compartments to the office, another the housing and protecting of the magnetic connections from injury. A third function which may be performed by these tubes, with the addition of small mouth-pieces and whistles, is that of conveying orders of intelligence between the office and the several compartments when goods are being received or delivered. The railway $R r^1$ is particularly advantageous in my improved warehouse when, from any cause, a compartment has been flooded, in lifting and removing goods while the floor is yet submerged, and even when there may be obstructions in the front part of the compartment.

The advantages due to many features of my invention are obvious without particular explanation; but those pertaining to my arrangement of the fire indicators $G^1 G^2$, may demand a few words. By reason of the fact that the said indicators are arranged so that one or more is affected by the temperature in the interior of each compartment, and exhibits the temperature to an observer outside, I am able to impart to the watchman or other attendant a knowledge of the temperature obtaining in each compartment, while forbidding him access to the interior of the several compartments, or any control over the locks, seals, or other safeguards against robbery which may be employed.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, in warehouses and other structures divided into compartments, in which goods are stored, is as follows:

1. I claim the flooding means arranged as herein represented relatively to the several compartments; that is to say, the tank F , the conducting pipes $I^1 I$, etc., the valve i , and distributing pipes $J^1 J^2$, etc., substantially as specified.

2. I claim the within-described provisions for discharging the water from the compartments; that is to say, the gratings K^1 , gutters L , leaders N , and valve n , substantially as herein specified.

3. I claim the concrete bed Z , arranged under the grating K^1 and gutters L , and having its upper surface inclined, all substantially as and for the purpose herein set forth.

4. I claim the means for indicating the existence of fire in each compartment at the office M , the same consisting of tubes $O^1 O^2$, etc., arranged as specified, with or without the uptake flue m .

5. I claim the valves S^1 , or their equivalents, in combination with the flues $H H^1$, etc., for admitting and controlling the circulation of cold air through each compartment of a fire-proof warehouse, substantially as and for the purpose herein specified.

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Witnesses:

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D. L. FREEBORN.