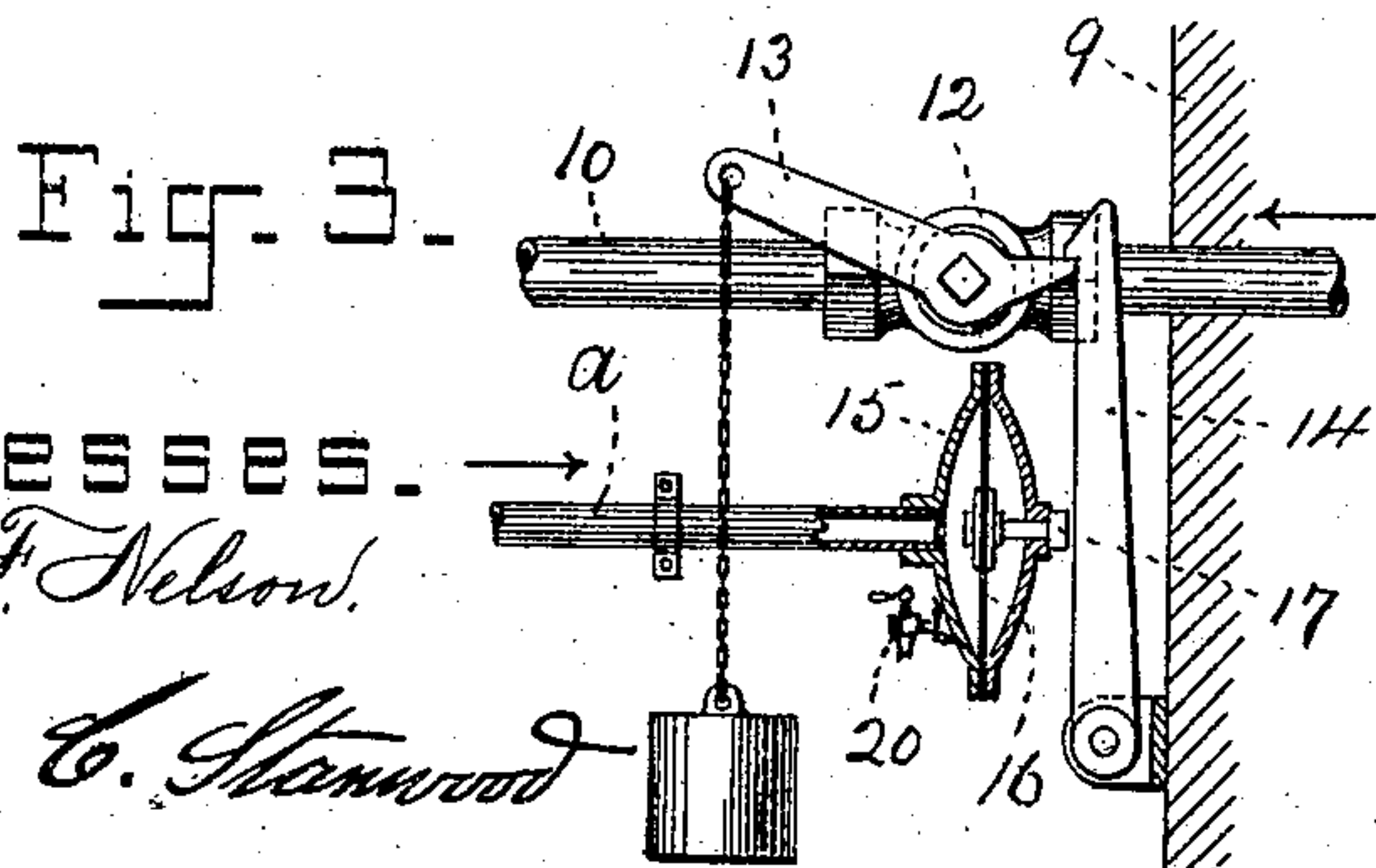
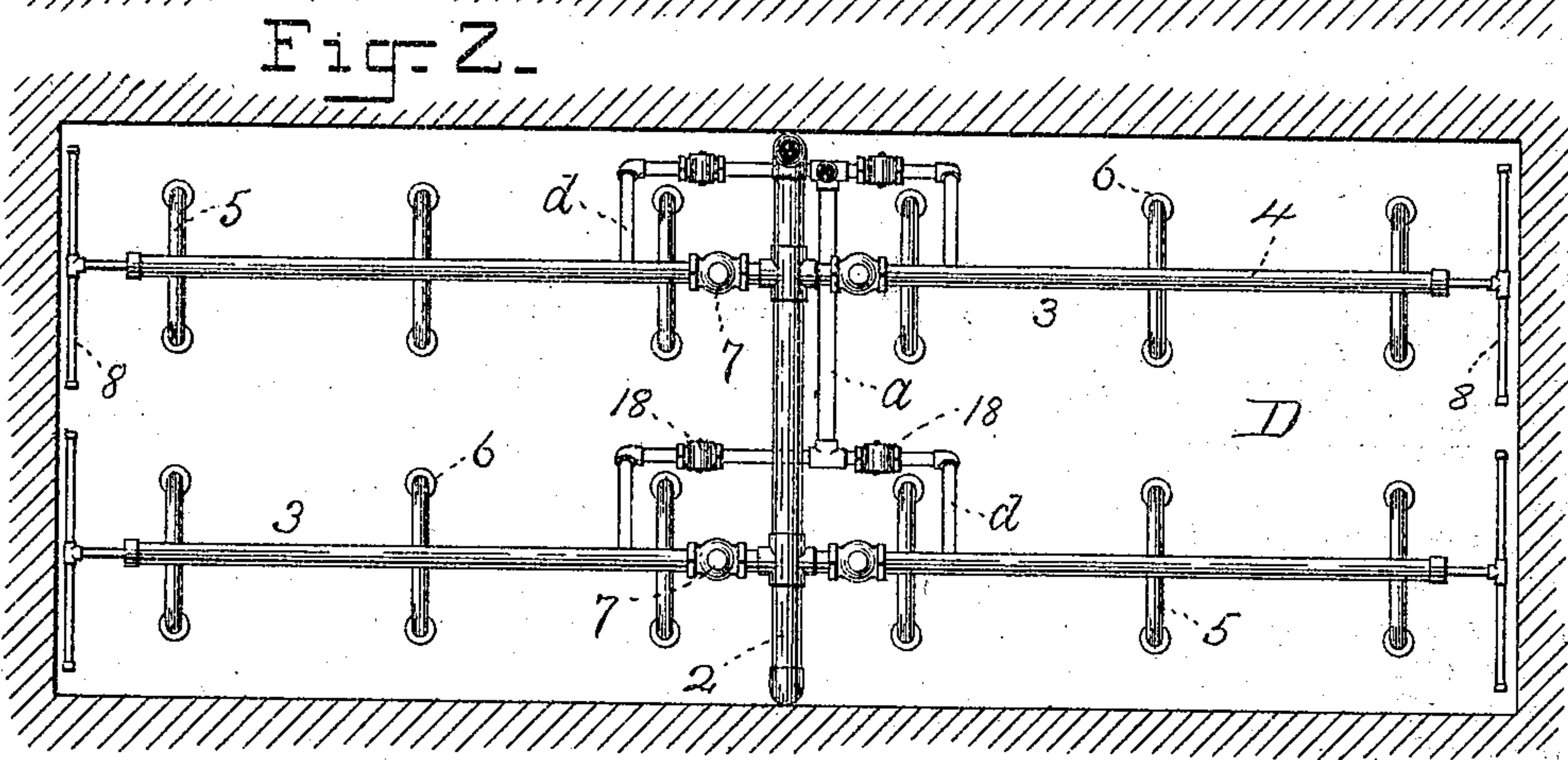
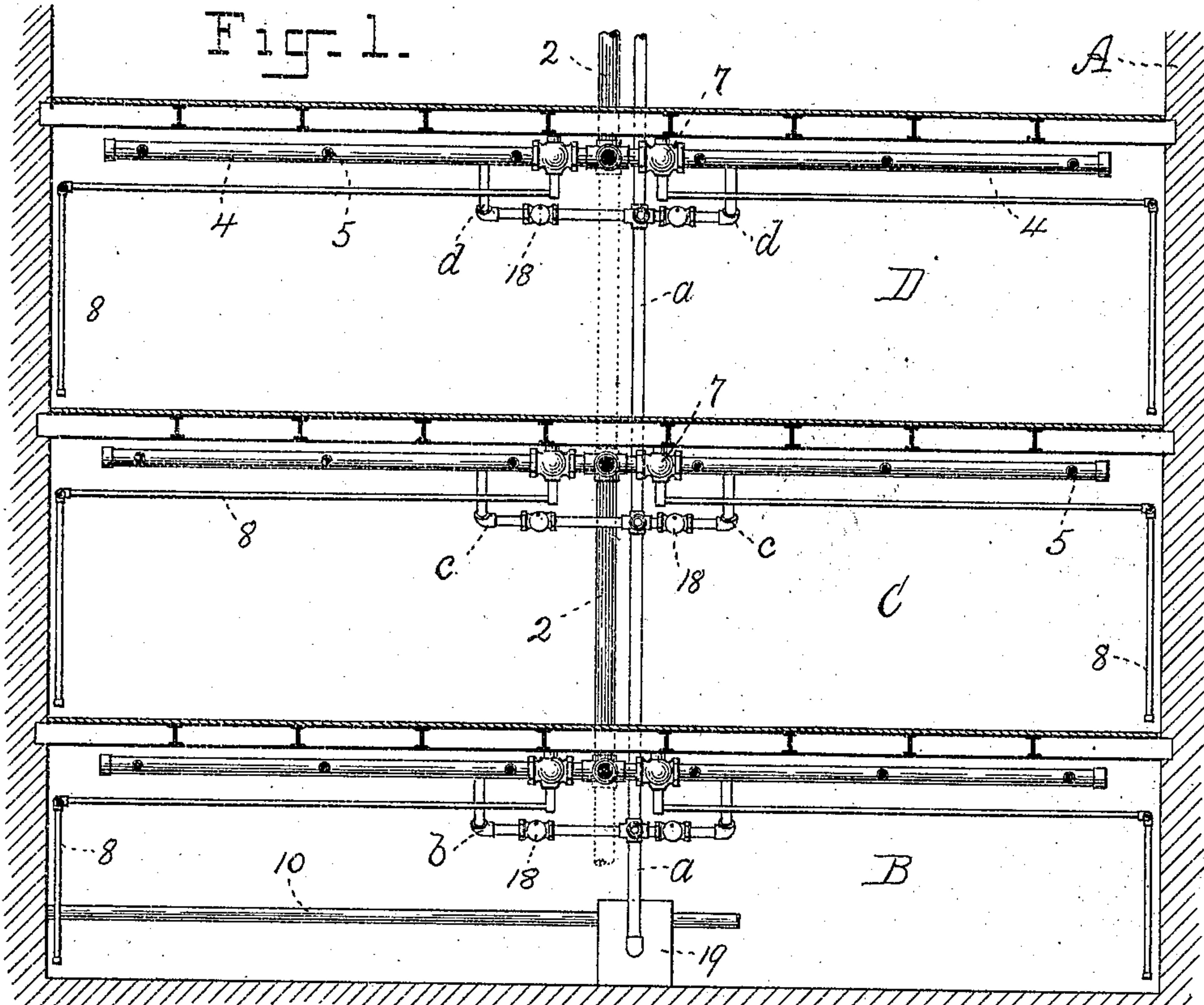


(No Model.)

N. LOMBARD.  
AUTOMATIC GAS CUT-OFF APPARATUS.

No. 501,951.

Patented July 25, 1893.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC GAS-CUT-OFF APPARATUS.

SPECIFICATION forming part of Letters Patent No. 501,951, dated July 25, 1893.

Application filed April 20, 1893. Serial No. 471,168. (No model.)

*To all whom it may concern:*

Be it known that I, NATHANIEL LOMBARD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Automatic Gas-Cut-Off Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to an automatic gas cut-off device to be employed in connection with and operated by automatic fire-extinguishing apparatus in such manner that when the latter is to be actively employed on any floor of a building for the purpose of quenching a fire, simultaneously the gas supply is shut off from said building.

Briefly described my invention consists in the use of a cut-off device together with an automatic fire-extinguishing apparatus, and a connecting pipe system from the several floors of a building to said cut-off, whereby controlling mechanism connected with the cut-off device is actuated to shut off the gas supply.

The drawings represent in Figure 1 a vertical sectional elevation of a four story building provided with my invention. Fig. 2 is a plan of a single floor. Fig. 3 is an enlarged view in detail of the gas cut-off device and operating mechanism.

In the drawings I have illustrated a building A, in section constructed with four stories of which three floors are shown and indicated respectively at B. C. D. Said building is equipped with automatic fire-extinguishing apparatus preferably with what is termed a dry system; that is the several sections are each controlled by a valve leading from the main water supply and no water is admitted except in cases of danger and to extinguish an incipient fire. In this instance and for purposes of explanation I have shown an automatic fire extinguishing apparatus after that fully described in an application, Serial No. 470,432, filed by me on the 15th day of

April, 1893. This apparatus embraces a main supply pipe 2, a series of sections 3 composed of branch pipes 4 with laterals 5, these latter being preferably equipped with sprinklers or distributors 6. In addition each section is provided with a valve 7 in proximity to the main supply, and said valves are adapted to be opened to admit water into the several sections only in time of danger. The operation of these valves, normally held closed by the hydrostatic pressure in the main pipe 2, is controlled by a system of small operating pipes 8 adapted to contain some volatile hydro-carbon, or other liquid and by means of the pressure suddenly created through heat action of the fire, certain mechanism connected with said valves is operated and water allowed to enter such section or sections as the location or character of the fire demands for its quenching.

In many instances where fires have suddenly reached dangerous proportions, their rapid development has been frequently attributed to the destruction of the gas meter, or the melting of the several attachments or fittings which serve to unite the gas main with the meter and gas pipe system throughout the building, thus permitting full vent of the gas supply to add fuel to the fire. My invention is intended to cut off the gas supply simultaneously with the operation of an automatic fire extinguishing apparatus.

To carry out my invention and as one instance of its practical operation I have shown the basement wall, see Fig. 3, at 9, and the gas main at 10 fitted at this point with a valve 12, which is arranged to be closed by a weighted lever 13. This latter is equipped with a short arm adapted to engage a pivotal latch 14, which normally holds the valve open, when no fire exists in the building. To render this gas cut-off device operative in times of danger and dependent upon the action of the fire-extinguishing apparatus in any floor of the building so equipped, I have provided a system of conducting pipes *b c d* respectively for the several floors and united them with a common pipe *a*, which terminates in the basement and is equipped at this end with a water-tight vessel 15 adapted in the present instance to contain a diaphragm 16 armed with a short



rod 17 arranged to contact against the latch 14. Furthermore check-valves 18 are placed in each section of conducting pipes at a point in proximity to their union with the pipe *a* for purposes hereinafter explained.

As shown in Fig. 1, the gas cut-off mechanism may be inclosed in a box 19 locked or otherwise closed to prevent accidental or intentional interference with the mechanism and further to prevent damage in case of fire and falling walls.

The operation of this automatic gas cut-off device embodying my invention is as follows: Presuming the building is in a normal condition the gas cut-off mechanism is in the position represented in Fig. 3 with the gas supply on, while the valves 7 are closed and the several sections 3 of the fire-extinguishing pipes are empty. Should a fire occur in the third floor D the operating pipes 8 are placed under pressure when some of the valves 7 are opened and water rushing in fills them while simultaneously a portion enters the conducting pipes *d*, passes the check-valve 18, which opens in this direction, and pours into the pipe *a*, which it at once fills. Pressure is immediately exerted on the diaphragm 16, the latter is actuated and the latch 14 is tripped with the result to release the lever and close the gas cut-off in the gas main at a point where the latter enters the basement through the foundation wall. When the water fills the pipe *a* it is prevented from backing up and entering the various pipe systems, as *b c* by means of their check-valves; hence, a fire on one floor does not injure or flood any other, and yet each floor is in one and the same system, and in readiness to operate the gas cut-off mechanism, should occasion require.

To provide that the gas cut-off shall not be operated by a leak and gradual filling up of the pipe *a* until the latch is released, I place a small waste valve 20 in the closed vessel, see Fig. 3, and leave it open enough to drip and thereby prevent water from accumulating, but not enough to prevent action of the diaphragm when a sudden rush of water fills the pipe due to a fire in the building. This

arrangement affords a complete safeguard against a large volume of gas filling a building at the time of a fire, since it is simple and efficient and its operation is positive, so long as the automatic fire extinguishing apparatus is in working order.

What I claim is—

1. The combination with automatic fire-extinguishing apparatus, of an automatic gas cut-off device, and a pipe system which connects the fire extinguishing apparatus on the several floors with the gas cut-off device, whereby the latter is operated upon activity of the fire-extinguishing apparatus, substantially as and for purposes explained.

2. The combination with fire-extinguishing apparatus composed of independent sections, each provided with a valve to the main, and means for operating said valves should a fire occur, of a gas cut-off device, a conducting pipe system consisting of independent floor sections united with the fire extinguishing pipe sections, and a common pipe which interconnects said conducting pipe system with mechanism for actuating the gas cut-off, substantially as stated and set forth.

3. In combination with automatic fire-extinguishing apparatus, a gas system, and a cut-off therein, a holding latch, latch-operating mechanism, and a pipe system which interconnects the fire-extinguishing apparatus with the latch-operating mechanism, substantially as described and stated.

4. The combination with a gas supply pipe, a valve therein, and a swinging latch of a pipe extending into the several rooms of a building and provided with check-valves, an operating diaphragm within a closed pipe at one end of said pipe, and fire-extinguishing apparatus interconnected with the other end, all operating substantially as specified.

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

NATHANIEL LOMBARD.

Witnesses:

H. E. LODGE,  
FRANCIS C. STANWOOD.