

No. 697,611.

Patented Apr. 15, 1902.

W. DOLL.
FIRE EXTINGUISHING DEVICE.

(Application filed May 22, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

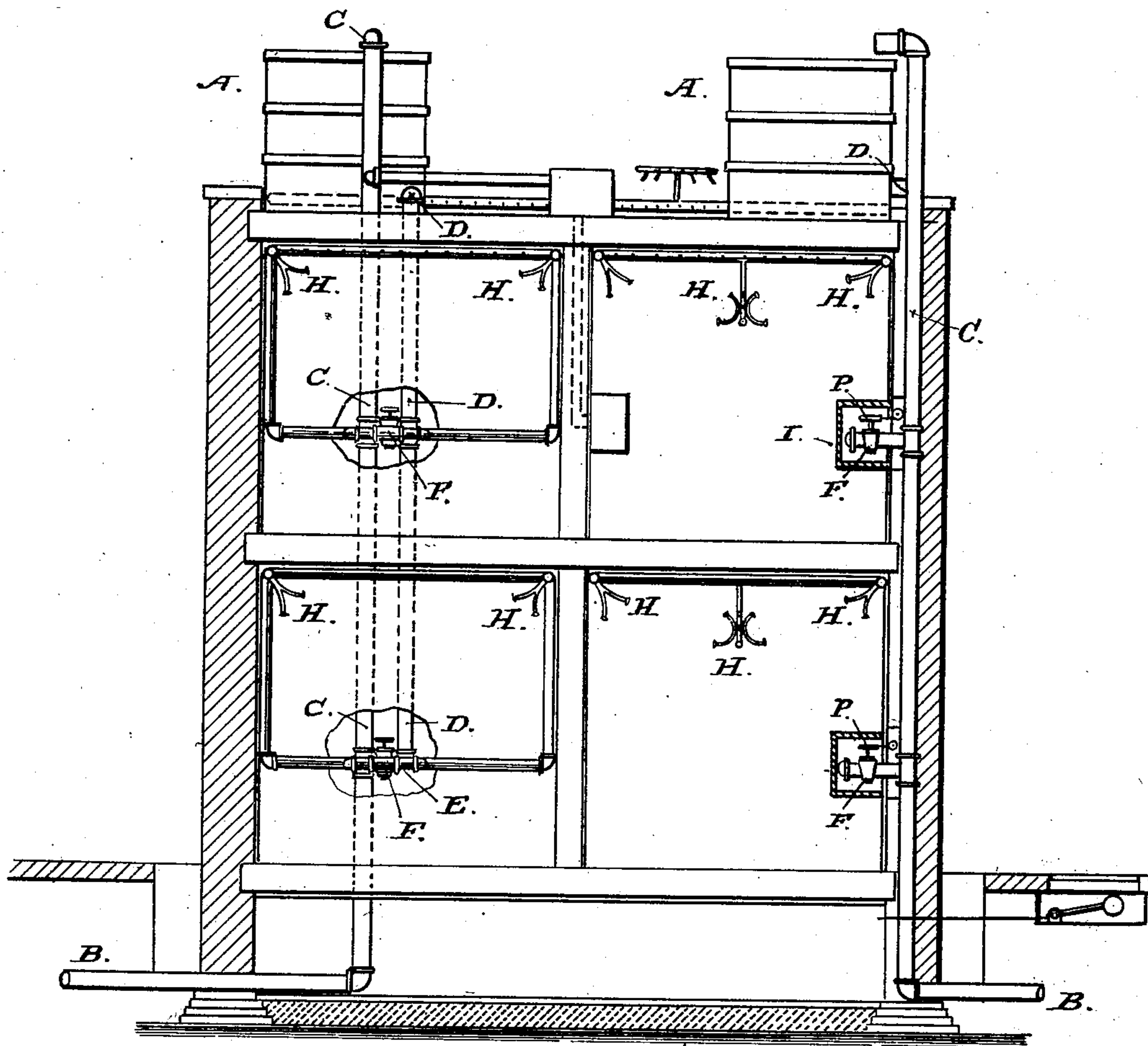
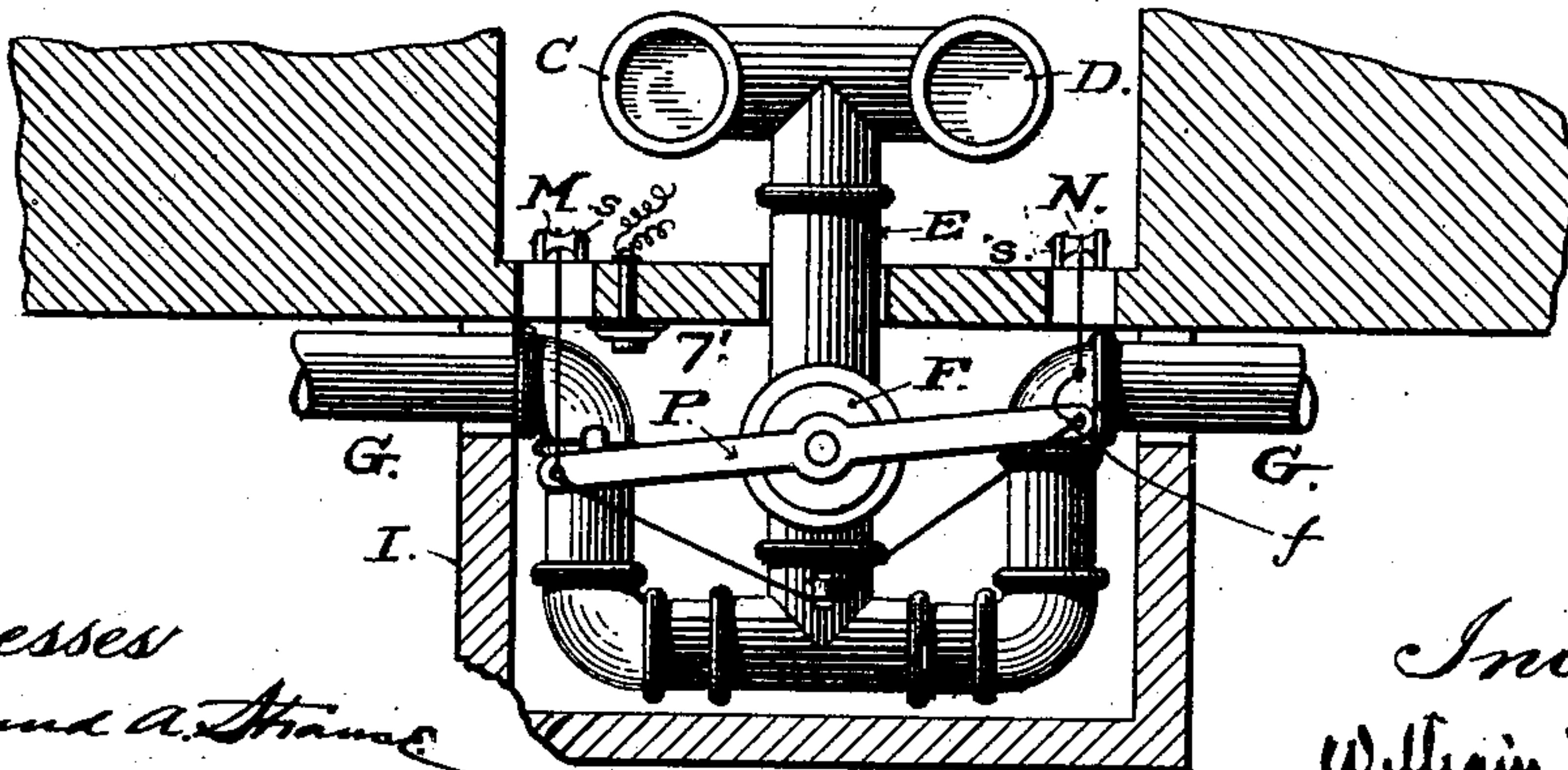


Fig. 2



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Fig. 3.

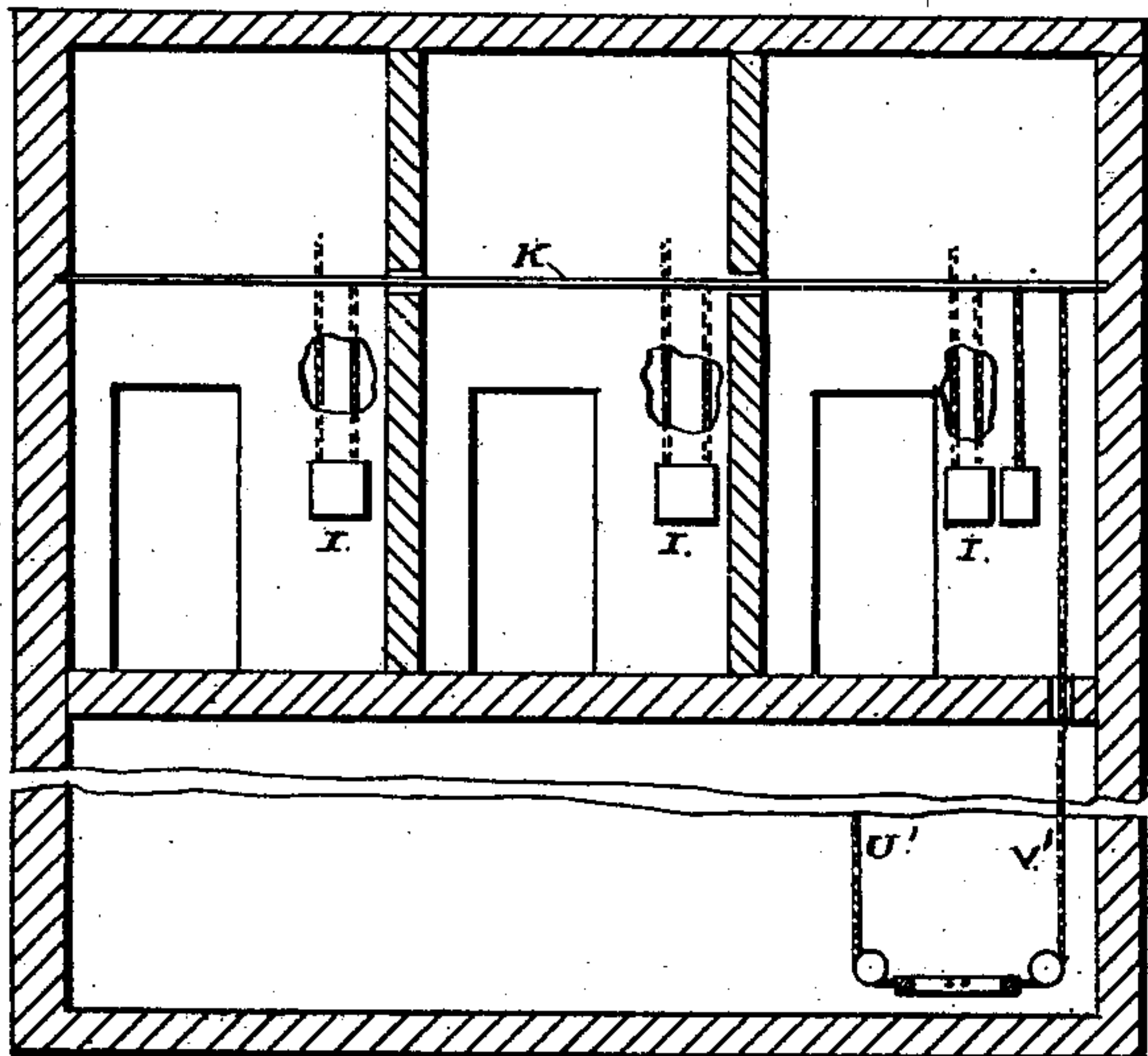


Fig. 4.

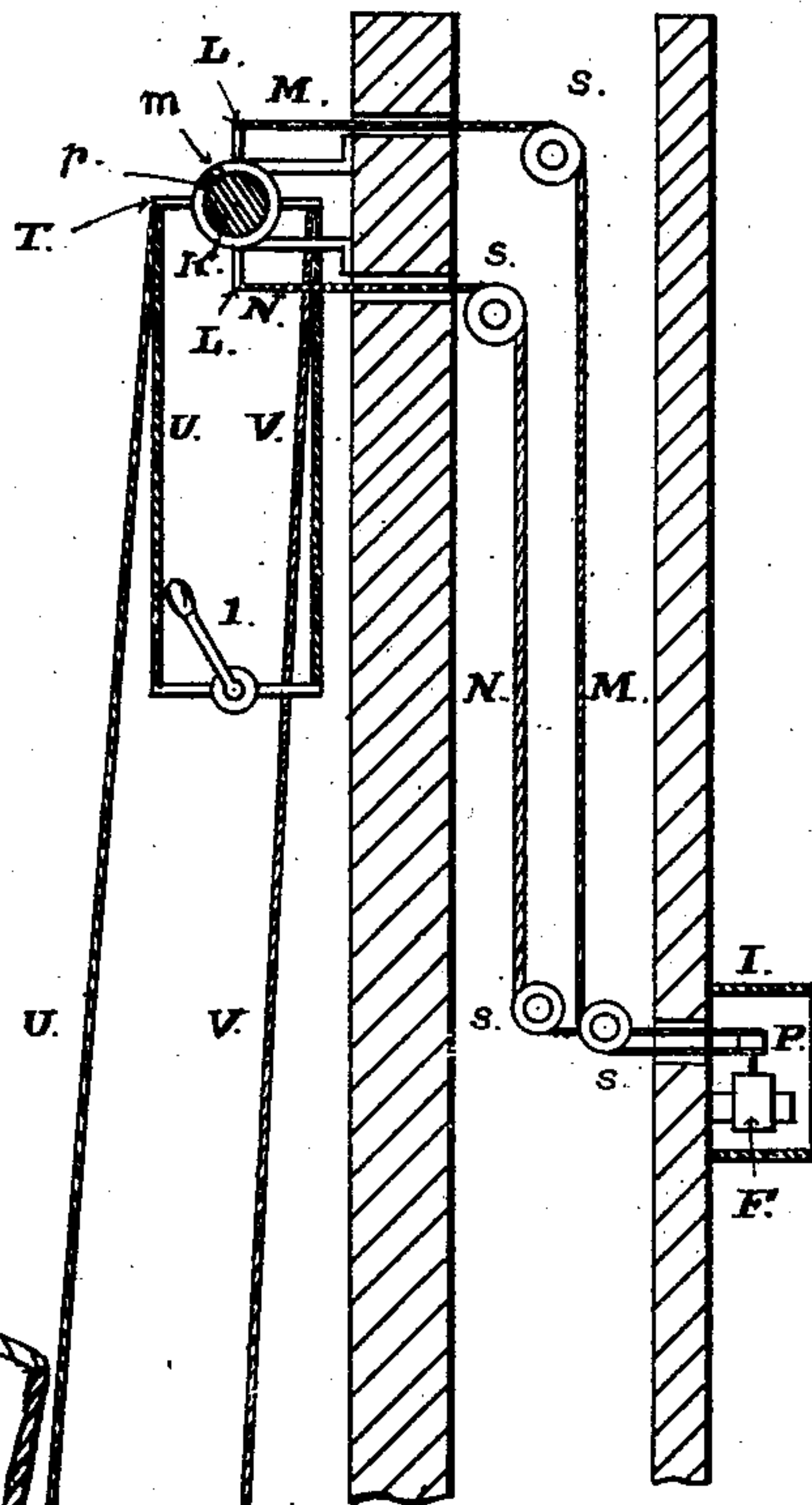


Fig. 5.

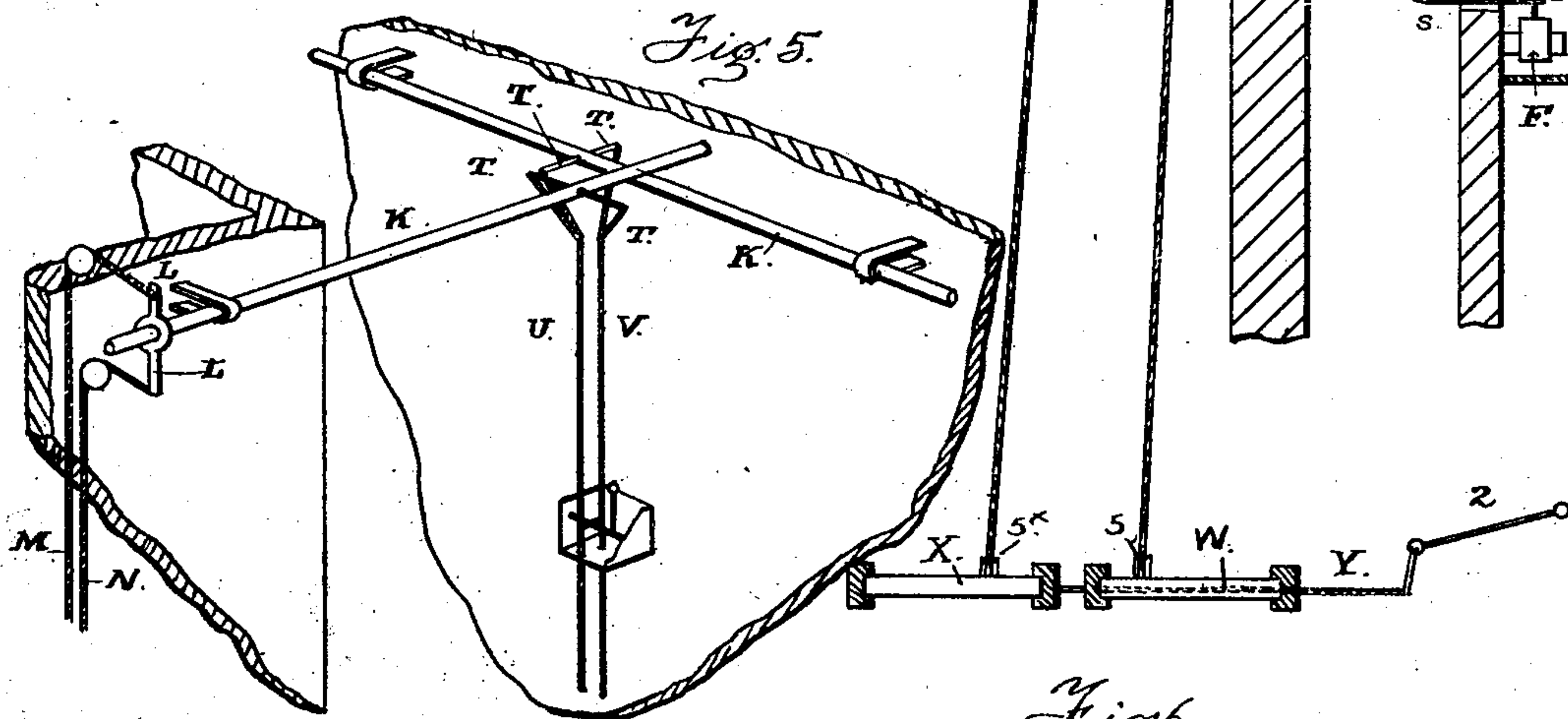


Fig. 7.

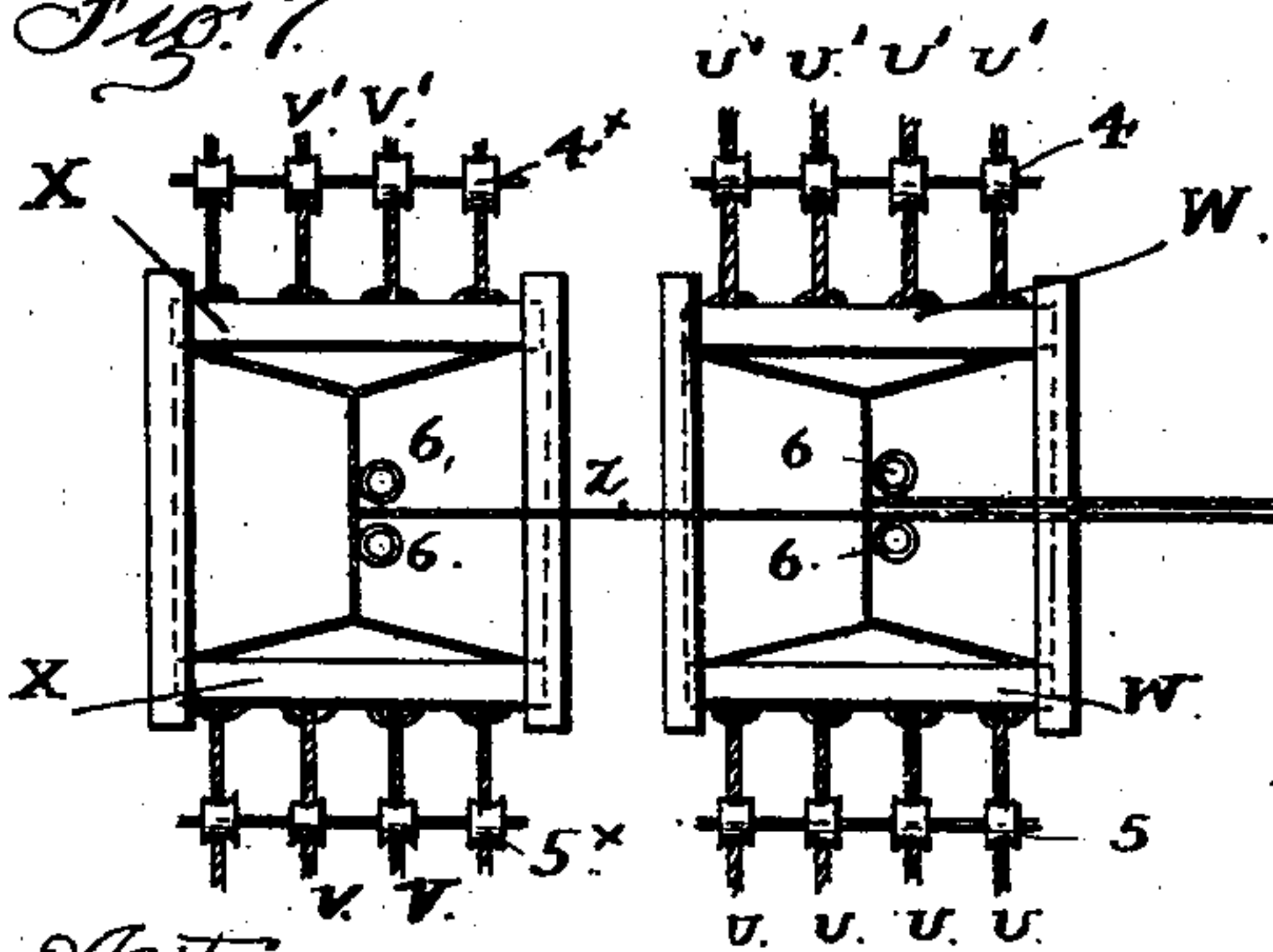
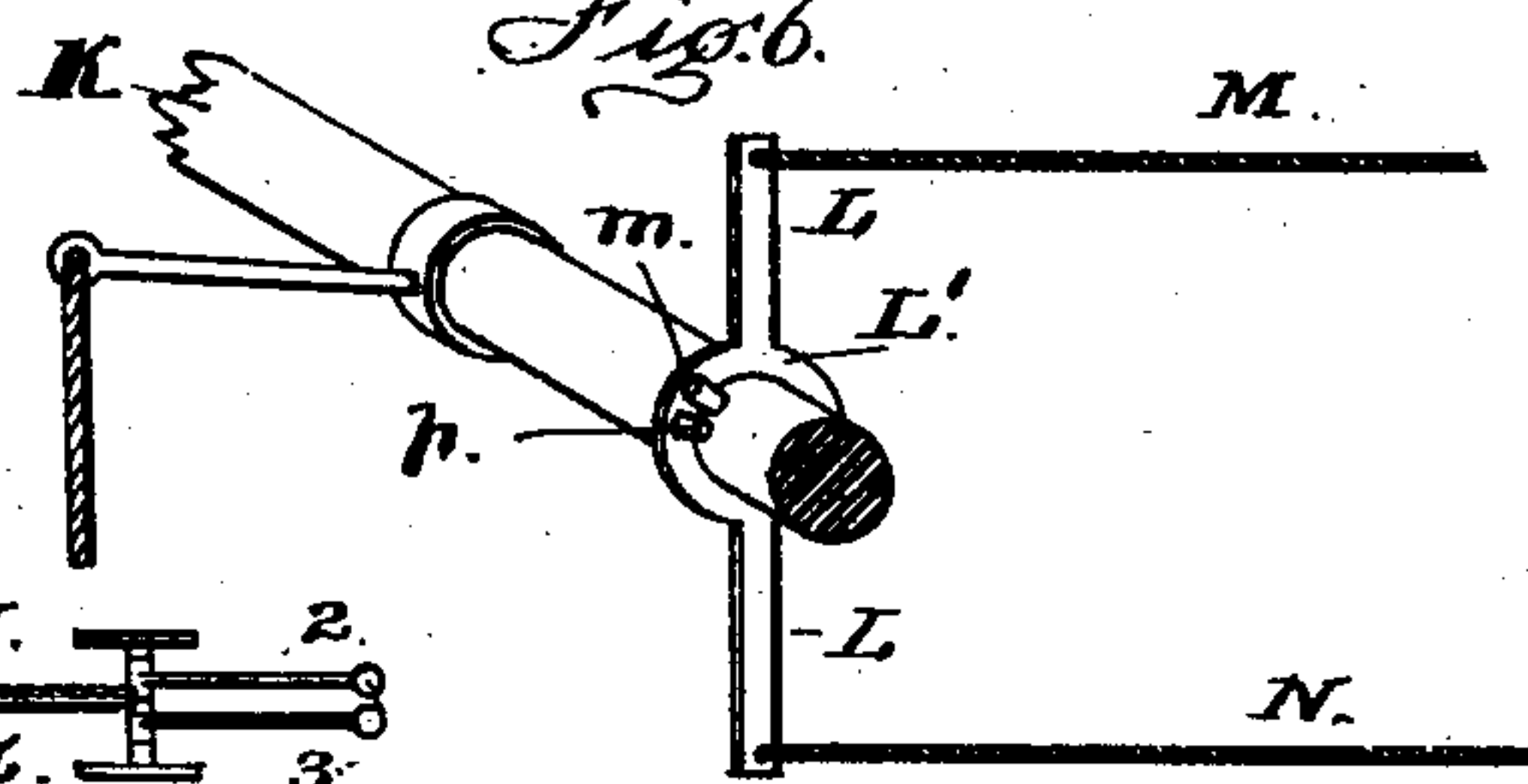


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM DOLL, OF SAN FRANCISCO, CALIFORNIA.

FIRE-EXTINGUISHING DEVICE.

SPECIFICATION forming part of Letters Patent No. 697,611, dated April 15, 1902.

Application filed May 22, 1901. Serial No. 61,475. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DOLL, a subject of the Emperor of Germany, residing in the city and county of San Francisco and State of California, have invented a new and useful Improvement in Fire-Extinguishing Systems for Buildings, of which the following is a specification.

The present improvements have for their object mainly to provide a fire-extinguishing apparatus for buildings having means for turning on the water in any particular room or part of a building, so as to distribute the water in jets or streams, and to limit or confine the application and distribution of the same either to one room or to several rooms on the same floor of the building; also for turning on and distributing water in jets on all the floors of the building at the same moment from a station outside the building; also for insuring a supply of water under proper degree of head or pressure in every room or distributing-point throughout the building. In connection with these features there is provided a means for shutting off the water at the valves from the outside of the building after the fire is extinguished when access cannot be had to the valve in the water main or pipe supplying the building.

The following description explains at length the manner in which I proceed to construct, apply, and carry out my said invention, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of a two-story-and-basement building with my system of sprinklers and water-distributing pipes arranged for operation on the roof and in the rooms of the several stories. Fig. 2 is a top plan, on an enlarged scale, of the controlling-valve located in each room and hallway or corridor for turning on and shutting off the water. Fig. 3 is an elevation of a hallway or corridor, showing the manner of connecting all the controlling-valves on the same floor with a hand-operated lever for turning on and shutting off the water. Fig. 4 is a vertical transverse section, on an enlarged scale, of the rock-shaft and connections by means of which the several controlling-valves on the same story or a series of rooms are connected with a hand-operated lever to be worked from the

same story and also with means for turning on or shutting off the water at the controlling-valves from the street or from a point outside the building. Fig. 5 is a detail in perspective of two rock-shafts and the connections between the valves and rock-shafts and operating-levers. Fig. 6 is a detail, on an enlarged scale, of the rock-shaft and valve operating arms, showing an alternative construction in which the arms are loosely connected to the rock-shaft. Fig. 7 is a detail top plan of the operating mechanism located in the basement for turning on and shutting off the water from the street or from a station outside the building.

In carrying out my invention I provide one or more water-tanks A on the top of the building, which I supply with water from the street-main B by means of a pipe C, carried up to the roof, and then from the tank I run a pipe D downward in close relation to the water-pipe C and through all the stories to the basement of the building. At each room or on each floor I couple these pipes C D together by a T-coupling E, and on the end of the coupling I place a plug-valve F with a rotary plug, from the outlet side of which I carry branch pipes G G upward to the ceiling or upper part of the room, hallway, or corridor. To these branch pipes are coupled at intervals apart suitable sprinkling devices H H with small apertures for throwing jets or fine streams of water. Usually these sprinklers are arranged in such relation that the jets will cross or intersect one another, so as to cover thoroughly the superficial area of the room. These sprinklers can be of any desired shape, ornamental or otherwise. The T-coupling is brought through the wall into the room at a convenient height from the floor, and the valve F on the end is inclosed in a box I, where it is readily accessible. The distributing-pipes G G are usually returned by U-couplings into the space between the studding of the wall or partition of the room. They may also be carried up to the sprinklers on the outside of the wall, if so desired.

Means are provided for operating the valve to turn on the water directly from the box and for turning on all the valves on the same floor from one station or point in the hallway or corridor. This means comprises a rock-

shaft K, mounted in brackets in horizontal position along the corridor or outside of the room, where it will be out of the way, and provided with two arms L L at each valve, from which wires M N lead down to the valve-box I, where they are carried through apertures in the wall to the box and are attached to the opposite ends of a lever P on the stem of the valve. In one form or arrangement of the apparatus the arms L L are attached to the rock-shaft K by a collar L', fitted so as to turn loosely on the rock-shaft, but also connected by a clutch or coupling, such as a pin *m*, fixed in the shaft, and a shoulder or stop *p* on the collar, by which the collar will be connected with and moved by the rock-shaft when the latter is turned in one direction, while the arms at any valve will be free to turn without moving the rock-shaft when the valve itself is turned on by hand to distribute the water to the sprinkling devices at that point alone. Thus by turning the rock-shaft in the proper direction all the valves connected to it can be operated simultaneously or any valve can be turned on singly without affecting the others in the group or series.

If it be desired to afford means for shutting off the supply of water either from any one floor or from the outside of the building after the fire is extinguished and access to the water-main or service-pipe of the building is not available, I fix the arms L L at each valve directly to their rock-shaft, so that they will turn with the rock-shaft, and then provide on each rock-shaft a pair or set of arms T T, from which wires U V are carried down to a hand-lever 1, placed in an accessible position. In such arrangement the lever F on the stem of the valve and the wires V are detachably connected together by a hook on the end of the wire and an eye *f* in the lever near its end, so that the wire can be readily detached from the lever F before turning the valve by hand, thus allowing any valve to be operated singly by hand without affecting the other valves connected with the same rock-shaft. All the valves attached to the same rock-shaft are also operated simultaneously by means of the hand-lever 1. In like manner provision is made for turning the rock-shaft from the outside of the building by connecting additional arms T' on the rock-shaft with slide-bars W X, located in the basement or on the ground floor of the building, by wires or ropes V' V', and then connecting the slide-bars W X with hand-levers 2 3, situated outside the building. In this part of the apparatus all the wires V' from the rock-shafts on the several floors are carried down and connected to the slide-bar W, and the wires of the other series V' are similarly connected to the slide-bar X. Separate cables Y Z, attached to the slide-bars, connect each one with its hand-lever in such manner that by working the lever 2 the slide-bar will be drawn forward and pulling on all the wires V' attached to it will

turn on the valves attached to the rock-shaft to which the slide-bar W is connected, or by moving the other lever 3 the other slide-bar will operate the rock-shafts through the other set of wires V' and connections, so as to act on the valves in a contrary direction and shut off the water. At those points where the wires require to be turned at an angle sheaves 5 are placed in the walls. Thus connected with the valve-lever it will be seen that the valve will be rotated forward to turn on the water when the rock-shaft is moved in one direction and that a movement back again to position will shut off the water, and thus the application of the jets to a particular room or series of rooms is always under control, being turned on and turned off at will. In a building of large size, where there is a number of corridors or hallways extending around the floors, and especially intersecting or meeting at right angles, I bring the rock-shafts together at right angles, as illustrated in Fig. 5, and carrying the wires U' V' down to the lowest story or basement I connect them separately with their respective slide-bars W X. In that arrangement, also, where the two sets of wires U' V' necessarily come from opposite or different directions I bring them together in two sets by means of sheaves 4 5 4^x 5^x and provide separate slide-bars for each set, as shown in the detail, Fig. 7. The slide-bars of each set are then attached to a common cable by connecting-cords running over the sheaves 6 6 where the pulling force on the cable is required to be at right angles to the movement of the slide-bars.

The two levers 2 3 may be located within a pit or excavation below the sidewalk outside the building, so as to be worked without entering the building, and thus in case of an emergency the water can be turned on throughout the entire building from the outside and as readily turned off again.

It will be noticed in this arrangement that every set or series of sprinklers is connected both with a storage-tank and with the street-main or source of pressure. By virtue of this arrangement the apparatus, being connected with a storage-tank, as well as with the regular water-supply, is always under working pressure from two sources, either of which will furnish the proper head or pressure for the sprinkling apparatus should one source fail. One or the other is therefore at hand always ready. The sprinklers on the roof, being connected in like manner with the tank and with the street-main, are also controlled from the inside of the building by means of a valve, and they are besides connected by a set of wires U² V² with the operating-levers 2 3 outside the building, so that the water can be turned on and off at either station, if necessary—that is, either from the inside or the outside.

In connection with each controlling-valve and its operating-lever I provide an electrical alarm-bell in circuit with a battery and with

a circuit-closing button 7, located in the valve-box I in such position with relation to the valve-operating lever that in turning on the water the end of the lever is brought against the push-button and the alarm is sounded at the same time that the valve is opened, thereby giving warning of the fire to all persons in the vicinity.

Among the advantages connected with the operation of this improved apparatus should be mentioned the following: The water can be instantly turned on and turned off in any room or on any floor of the building without affecting the sprinklers in the remaining portion of the building. The water can be turned on to the whole system of sprinklers without going inside, and it can be in like manner turned off again after its work is done. Suitable head or pressure is insured at all times without the use of a pump. The system on any floor or section of the building is under control from a single station, and the water can be turned on or off at will, thereby enabling a fire to be confined to the particular floor where it originated and the water to be turned off the moment the fire is extinguished without excessive use or waste of water.

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

1. In a fire-extinguishing apparatus for buildings, the combination of a storage-tank located in the upper part of the building, a supply-pipe connecting said tank with the main water-supply outside the building, a pipe leading from said tank downwardly through the building and in close relation to the supply-pipe of the tank, a series of sprinkling devices, a branch pipe connecting each sprinkling device with the pipe leading down from the storage-tank and also with the supply-pipe connected with the main water-supply outside the building, a controlling-valve in the branch pipe operating to open and close connection between the branch pipes of the sprinkling device and both of said supply-pipes simultaneously, and means for operating said valve.

2. In a fire-extinguishing apparatus for buildings, the combination of a storage-tank, a pipe leading therefrom downward through the several stories of the building, a pipe connected with the main water-supply leading from the street-main upward through the several stories to the tank, branch pipes at every story at predetermined points tapped into both standing pipes, a series of sprinkling devices in each room, a controlling-valve

having an operating-lever adapted to turn on or off the connection between the branch pipes and standing pipes, and means for operating said valves both separately and in groups, comprising the rock-shaft at every floor, and wires separately connecting the valve-levers with the rock-shaft, whereby the movement of the rock-shaft in one direction will open all the valves, and in the other direction will close them.

3. In a fire-extinguishing apparatus for buildings, the combination of a storage-tank, a pipe leading therefrom downward through the several stories of the building, a pipe connected with the main water-supply leading from the street-main upward through the several stories to the tank, branch pipes at every story at predetermined points tapped into both standing pipes, a series of sprinkling devices in each room, a controlling-valve having an operating-lever adapted to turn on or off the connection between the branch pipes and the standing pipes, and means for operating said valves both separately and in groups, comprising the rock-shaft at every floor, wires separately connecting the valve-levers with the rock-shaft whereby the movement of the rock-shaft in one direction will open all the valves and in the other direction will close them, and means located outside the building to which said rock-shafts are connected by wires U' V' for operating said rock-shafts from the outside of the building.

4. In a fire-extinguishing apparatus for buildings, the combination of stationary sprinkling devices, a storage-tank, a water-pipe leading therefrom downward through the several stories of the building, a water-supply pipe leading upward from the street-main to the tank, branch pipes tapped into both water-pipes and connecting the sprinkling devices with the water-supply both of the street-main and the storage-tank, a controlling-valve in the connection between the branch pipe and the supply-pipe, having an operating-lever, and means connecting the levers of all the valves with operating devices outside the building, comprising the rock-shafts having arms to each valve, and wires connecting said arms of the valve-levers with the operating devices.

In witness that I claim the same I have hereunto signed my name in the presence of two witnesses.

WILLIAM DOLL. [L. S.]

Witnesses:

EDWARD E. OSBORN,
GEO. T. KNOX.