

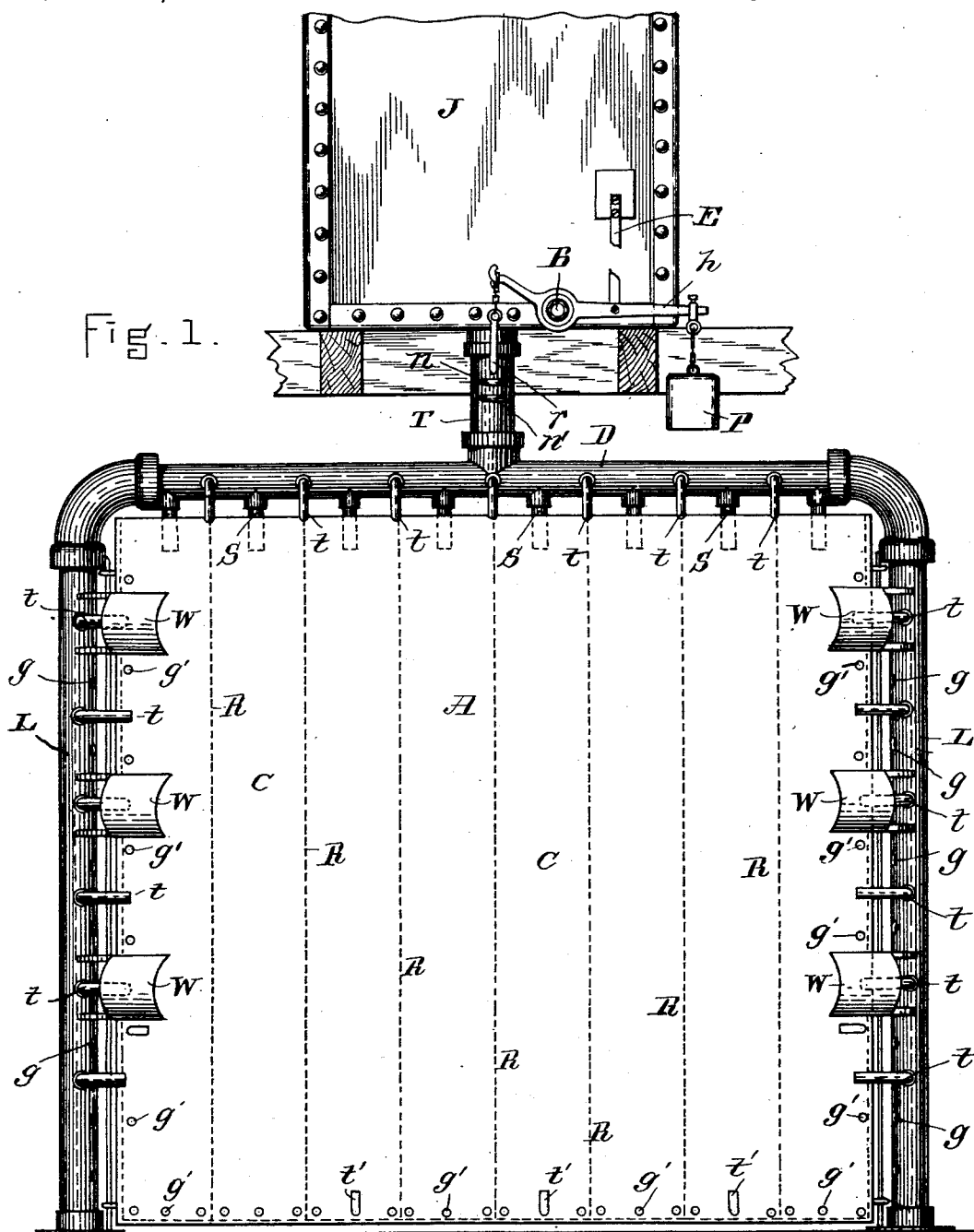
(No Model.)

4 Sheets—Sheet 1.

G. W. PUTNAM.
FIRE CURTAIN OR FIRE BARRIER.

No. 520,218.

Patented May 22, 1894.



WITNESSES.

Henry Marsh.
J. C. Stephenson

INVENTOR.

George W. Putnam.

(No Model.)

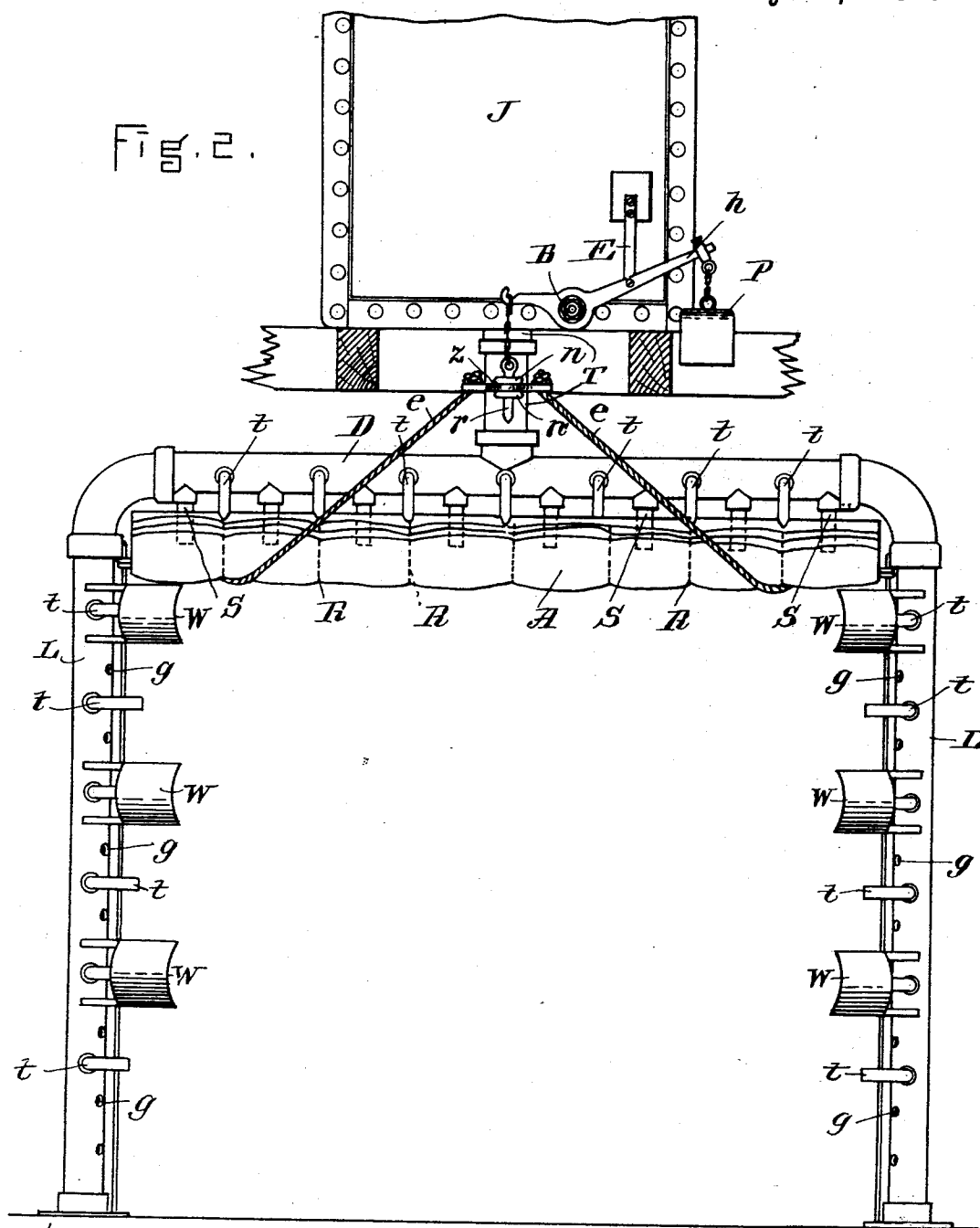
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Fig. 2.



WITNESSES.

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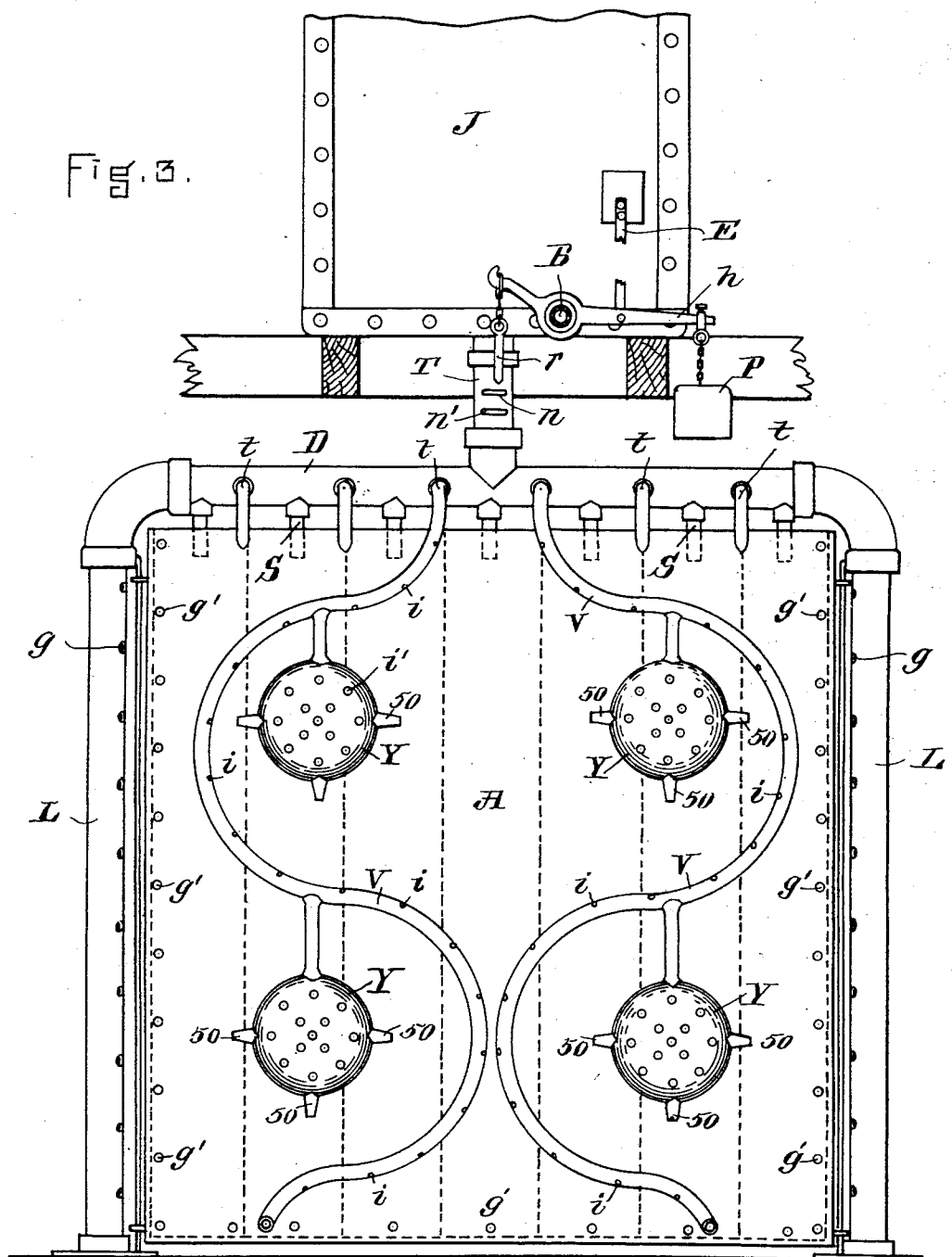
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Fig. 4.

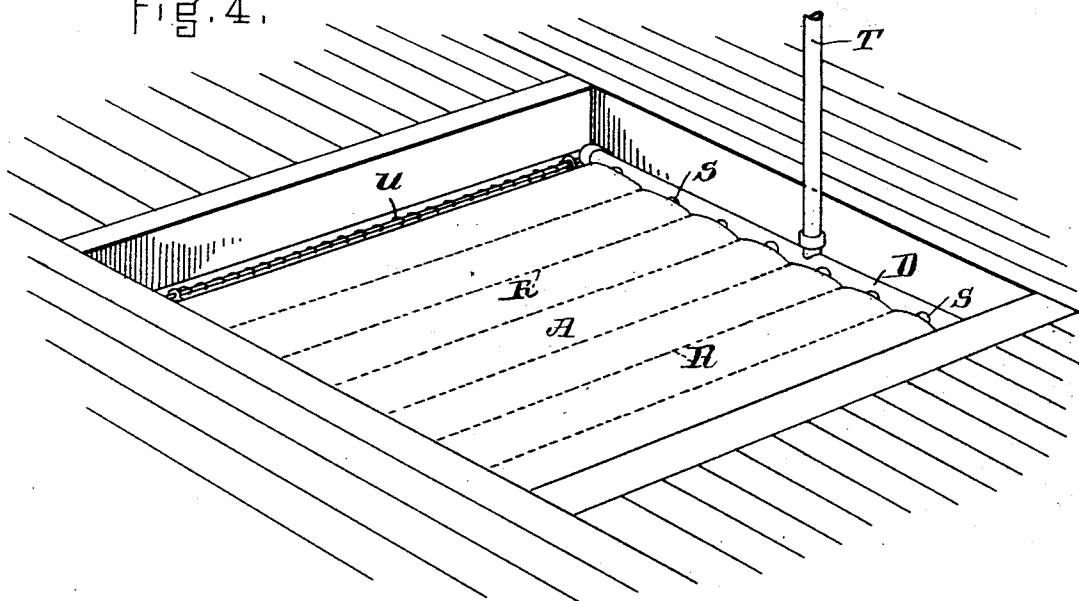
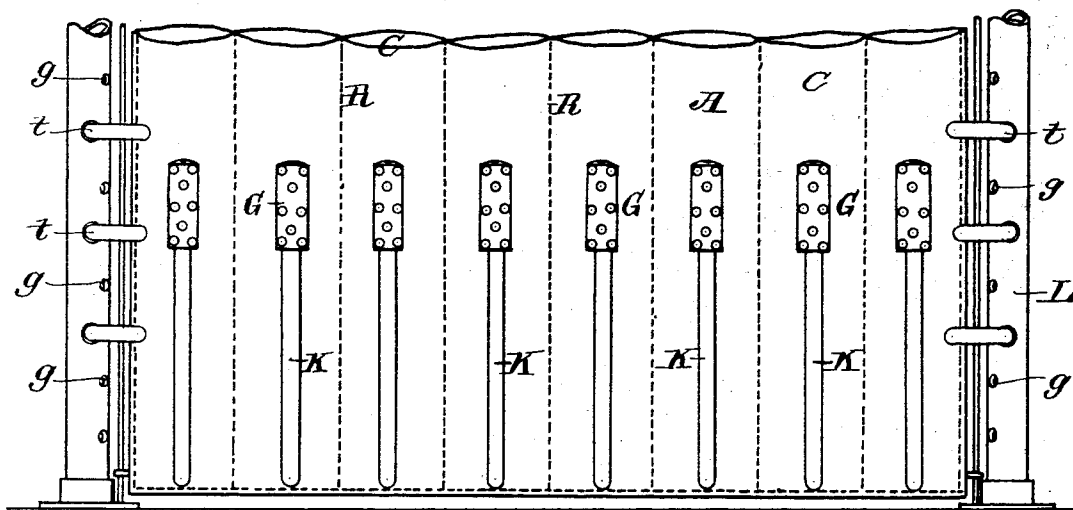


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE W. PUTNAM, OF LYNN, MASSACHUSETTS.

FIRE-CURTAIN OR FIRE-BARRIER.

SPECIFICATION forming part of Letters Patent No. 520,218, dated May 22, 1894.

Application filed August 15, 1893. Serial No. 483,237. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. PUTNAM, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain Improvements in Fire-Curtains or Fire-Barriers for Preventing the Spread of Fires; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation of my improved fire-curtain or barrier. Fig. 2 is a front elevation of the same, showing it rolled up. Fig. 3 is a front elevation of the same, illustrating a modification of my invention, in which the curtain is provided on the outside with flexible perforated pipes and water receptacles. Fig. 4 is a view of a hatchway or lightshaft, illustrating the application of my fire-curtain thereto. Fig. 5 is a front elevation illustrating another modification of my invention.

The object of my invention is to provide a simple and effective means for preventing the spread of fires in theaters and similar places, in manufacturing establishments where combustible materials are used, and in warehouses where valuable and combustible material and goods are stored, so that if a fire should take place in a theater, the said curtain or fire-barrier will, when placed in position, effectually prevent the spread of the fire to the auditorium or other portion of the building; or if the fire takes place in a workshop where combustible materials or goods are used or stored, or in a warehouse where there are large open areas filled with valuable goods, the said fire-curtain or fire-barrier when brought into position automatically or otherwise, will effectually prevent the spread of the fire and confine it to the room or place where it originated.

To this end my invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and specifically claimed.

In the said drawings, D represents a horizontal pipe of suitable size and material, and L, L, represent two vertical pipes placed one at each end of the said horizontal pipe D.

A represents my fire curtain or fire barrier attached in any suitable manner at the upper edge to the horizontal pipe D. This fire-curtain or fire-barrier A is composed of one or more thicknesses of cloth or other similar textile fibrous and absorbent material which will readily receive and retain water or other fire-quenching liquid. The fire-curtain A is arranged in case of fire to be instantly wet and drenched with water or other fire quenching liquid, and to be kept in that condition as long as may be needed. To accomplish this wetting or drenching I have a fountain or tank J of proper size filled with water or other fire-quenching liquid, and placed above the horizontal pipe D at any proper point desired. Attached at a proper point to this tank J is a valve or stop-cock B, and connected with the valve B is a lever h, to one arm of which is fastened a weight P, or a spring can be used instead of said weight p or both.

T is a supply pipe leading from the tank J to the horizontal pipe D for the purpose of conveying water to said pipe D to be used for the wetting of the curtain A, the admission of water from the tank J to the pipe T being controlled by the valve B.

t, t, represent sprinkling pipes or nozzles attached to the horizontal pipe D, and similar sprinkling pipes or nozzles t or openings g or both are placed at suitable points in the vertical pipes L, L. To a portion of the said sprinkling pipes t, t, I prefer to attach deflectors W, Figs. 1 and 2 which will cause the water from the pipes or nozzles t to fall in nearly an unbroken sheet upon the front of the curtain A. When not needed for use the curtain A is arranged to be rolled up, as shown in Fig. 2.

r is a bolt for retaining in place the fastenings e, e, which hold the curtain A when the same is rolled up as shown in Fig. 2. The bolt r passes through the upper socket n, then through the ring z into the lower socket n', thus holding the curtain A securely in place and ready to drop when the bolt r is withdrawn. The sockets n and n' through which the bolt r passes, are located back of the top of the curtain so that there is a forward draft on the ring z which renders it certain to be pulled out from between the sockets n and n'.

when the pin *r* is withdrawn. At a suitable point above the lever *h*, I secure a strip of soft fusible metal *E*, which will melt at a low degree of heat, the opposite or lower end of this strip of fusible metal *E* being attached in a suitable manner to the lever *h*. When a fire takes place in the vicinity of the curtain *A*, the heat ascending quickly, melts the fusible strip *E* and releases the weight *P* which then falls by its own gravitation. In doing so it changes the position of the lever *h*, which change causes the valve or stop-cock *B* to open and permit the water from the tank *J* to flow through the pipe *T* to the horizontal pipe *D*.

The same automatic action described above draws up the bolt *r*, which holds up the fastenings of the curtain *A*, which then instantly falls by its own weight into a perpendicular position as shown in Figs. 1 and 3. As the curtain falls it receives the water which rushes upon it from the sprinkling pipes *t*, *t*, and deflectors *W*, thus wetting and drenching the curtain *A*, making the same completely fireproof, and by these means preventing effectually the heat and flame from spreading beyond said curtain *A*.

I do not propose to confine myself strictly to the above mode of producing the automatic release of the curtain and the simultaneous flow of the water, as many modifications may be employed in which the melting of fusible metal by the heat of an incipient fire or the operation of any suitable heat-actuated device is caused to produce the automatic dropping of the fire-curtain *A* into position, and at the same time the drenching of the same with liquid to make it fireproof, and it will be seen that my invention can readily be connected with any system of automatic fire sprinklers in use.

To make more sure of the wetting and thorough drenching of my fire-curtain *A*, I preferably employ the following construction and arrangement: I make the fire-curtain *A* of more than one thickness of cloth, and convey water between said thicknesses of cloth by means of pendent pipes *S*, *S*, attached to the under side of the horizontal pipe *D*. I also sew in a vertical or other preferred direction, seams *R* at proper intervals in the curtain *A*, and the spaces *C* between said seams *R* constitute water channels, passages, or pockets, into which the water from the tank or fountain *J* will run from the pendent pipes *S*, *S*, which are attached to the horizontal pipe *D*. I also apply my deflectors *W* to this form of my invention and have also sprinkling pipes *t'* and orifices *g'* placed at proper points in the curtain *A*. If desired I may apply to the openings at the lower ends of the channels *C*, flexible tubes or pipes *K* as shown in Fig. 5 provided with sprinkling-heads *G* at the upper end, said tubes being secured to either or both sides of the curtain. By the use of these tubes *K* the water which is used to wet the curtain is utilized a second time, and in con-

sequence of the pressure of the water in the tank *J*, which may be on the roof of the building or at any point above the curtain *A*, the water will be thrown in front and upon the curtain *A* in a large number of jets which will send the water in small streams in every direction, forming a water veil, thus making it more certain that the flames cannot pass beyond said curtain *A*.

In some cases I may have one or more flexible pipes *V* as shown in Fig. 3, attached to the horizontal pipe *D* to receive and convey water to the outside of the curtain *A*, and these pipes *V* are provided with suitable perforations *i*, *i*, at intervals arranged so as to throw out jets of water, and are also preferably provided at proper points with water receptacles *Y* provided with discharge nozzles *50* and orifices *i'*, which further serve to spread the water in all directions. If desirable the flexible pipe *V* and water receptacles *Y* may be omitted in this form of my invention.

In Fig. 4 is represented a modification of my invention which illustrates its application to elevator-wells light-shafts, hatchways, &c., in which case the curtain or fire barrier will be extended or drawn horizontally across the opening to be protected by means of springs *u*, or weights if preferred; the release of the curtain or barrier and the simultaneous drenching of the same being effected automatically by the melting of a strip of fusible metal in the same manner as with the vertically arranged curtain previously described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A fire-curtain or barrier composed of one or more thicknesses of cloth or other suitable absorbent material, in combination with a liquid supply pipe connected with a suitable source of supply and provided with a valve, liquid-distributing pipes connected with said supply pipe and provided with orifices or nozzles through which the liquid is discharged upon the said curtain, and a device for holding up said curtain and holding the supply pipe valve closed, said device being adapted to be released by the action of heat, whereby the curtain is released and the valve simultaneously opened to admit the liquid to the distributing pipes, substantially as set forth.

2. The combination of the fire-curtain or barrier *A*, composed of cloth or other suitable absorbent material, a liquid-distributing pipe connected with a suitable source of supply and provided with orifices or nozzles through which the liquid is discharged upon the curtain, means for automatically releasing said curtain on the occurrence of a fire and simultaneously admitting the liquid to the distributing pipes, and the deflectors *W* interposed between the said discharge orifices or nozzles and the curtain, substantially as and for the purpose described.

3. A fire-curtain or barrier *A*, composed of one or more thicknesses of cloth or other suit-

able absorbent material and provided with water channels or pockets between said thicknesses of cloth or material, a liquid-distributing pipe connected with a suitable source of supply and provided with pipes S for conducting the liquid to the water channels or pockets of the curtain, and means consisting of the valve B, weighted lever *h*, fastenings *e*, bolt *r* connected with said lever *h*, and the fusible tie-piece E for automatically releasing the curtain on the occurrence of a fire and simultaneously admitting the liquid to the said distributing pipe, whereby it is caused to flow into the water channels or pockets of the curtain, substantially as and for the purpose set forth.

4. The combination, with a fire-curtain or barrier A, composed of cloth or other suitable absorbent material and provided with water channels or pockets adapted to be automatically supplied with liquid from a suitable source of supply on the occurrence of a fire, of a series of flexible pipes K secured to the outside of the curtain and communicating with the water channels or pockets, said pipes extending upward and being provided with

perforated sprinkling-heads G substantially as and for the purpose set forth.

5. The combination, with the fire-curtain or barrier A composed of cloth or other suitable absorbent material, of the liquid supply pipe T connected with a suitable source of supply, distributing pipes D, L, provided with orifices or nozzles through which the liquid is discharged upon the said curtain, a valve B for controlling the admission of liquid to the supply pipe, said valve being provided with a weighted lever *h*, fastenings *e* for holding up the curtain A, the bolt *r* connected with the lever *h* for retaining the fastenings *e* in place, and a fusible tie-piece E secured to the lever *h* and adapted to hold the valve closed and the curtain rolled up until the occurrence of a fire, the whole constructed and arranged substantially in the manner and for the purpose herein shown and described.

Witness my hand this 11th day of July,
A. D. 1893.

GEORGE W. PUTNAM.

In presence of—

P. E. TESCHEMACHER,
HARRY W. AIKEN.