

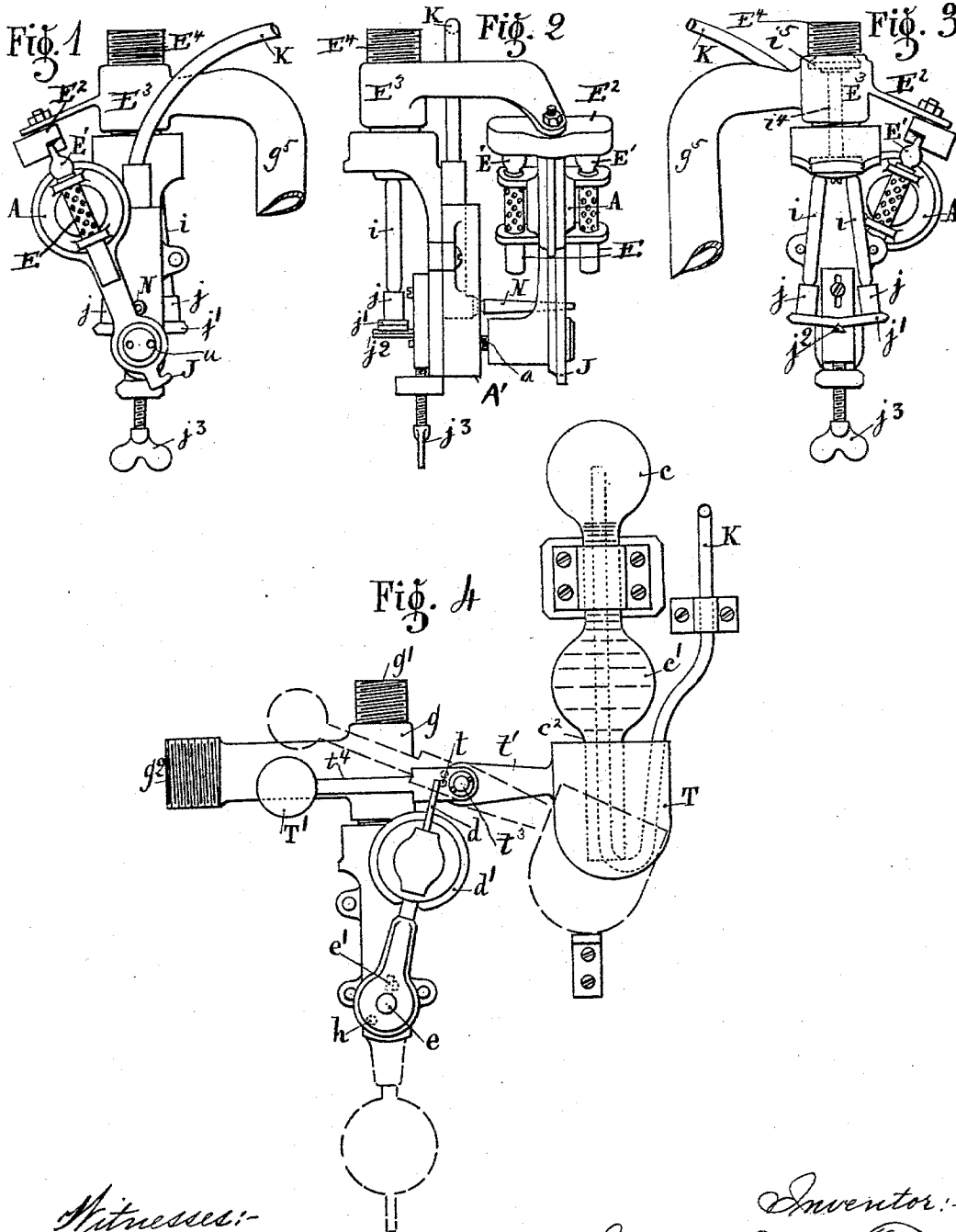
(No Model.)

2 Sheets—Sheet 1.

J. L. TIRARD.
FIRE EXTINGUISHING APPARATUS.

No. 569,686.

Patented Oct. 20, 1896.



Witnesses:-
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C. H. Houp

Inventor:-
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 5

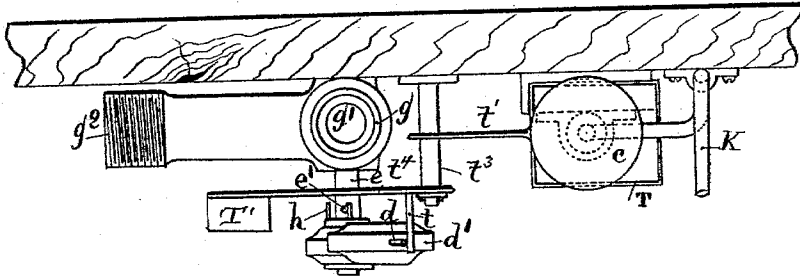


Fig. 7

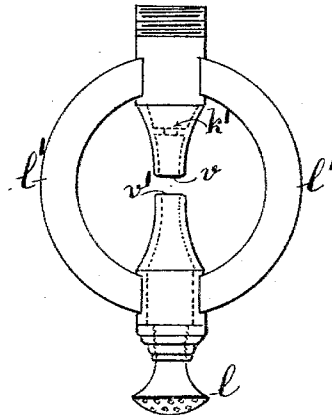


Fig. 6

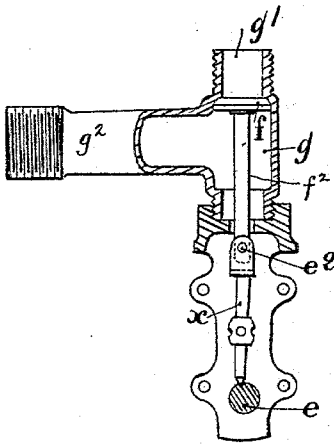
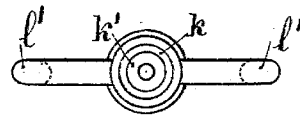


Fig. 8



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UNITED STATES PATENT OFFICE.

JOSEPH LOUIS TIRARD, OF CAEN, FRANCE.

FIRE-EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 569,686, dated October 20, 1896.

Application filed December 19, 1894. Serial No. 532,332. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH LOUIS TIRARD, a citizen of the French Republic, residing at Caen, France, have invented certain new and useful Improvements in Fire-Extinguishing Apparatus, of which the following is a description.

My invention has relation to fire-extinguishing devices, and among the objects in view is to provide an apparatus which is adapted to automatically operate to extinguish a fire when the temperature within a room exceeds a predetermined degree; and my invention consists in the novel construction, arrangement, and combination of parts, as hereinafter fully described, illustrated in the drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a front elevation of the thermostatic portion of the apparatus; Fig. 2, a side view thereof; Fig. 3, a rear view of the same. Fig. 4 is a front view of the water-distributing device; Fig. 5, a plan view of the same; Fig. 6, a sectional view of the valve, valve-casing, and contiguous parts. Fig. 7 is a detail elevation of the spraying device. Fig. 8 is a plan view of Fig. 7.

The present invention operates on the same principle as the apparatus shown and described in United States Letters Patent No. 504,002 and is an improvement on said patented apparatus, and in order that my present invention may be clearly understood I will describe it in detail, reference being had to the accompanying drawings.

Referring particularly to Figs. 1, 2, and 3, A indicates a weighted arm pivoted at *a* upon a suitable support A', and which arm carries thermostats E, whose bulb portions E' are adapted to be readily broken by the contained mercury when the temperature of the atmosphere rises beyond a certain degree, say 30° or 40° centigrade. The said portions E' rest against a supporting arm or bracket E², integral with a sleeve E³, screwed upon a threaded tube E⁴.

The arm A has a hook J, which when the arm turns upon its pivot is adapted to strike against and break a frangible tube N, which will permit of air entering a tube K partially exhausted of its air, the opposite end of which enters a globe *c* of a receptacle *c*², also hav-

ing a second globe *c'*, which is filled with some liquid, as glycerin.

The tube K leads off to some point somewhat remote from the point where the devices indicated in Figs. 1 to 3 are located, and thus the parts C C' and trough T, presently mentioned, are at some distance from the said devices, as in my prior United States patent, above referred to, and for a similar purpose.

The receptacle *c*² is arranged within a trough T, which has an arm *t'*, secured upon a horizontal shaft *t*², to the outer end of which is secured one end of an arm *t*⁴, whose opposite end is provided with a counterbalancing-weight T⁷.

The arm *t*⁴ has a pin *t*, against which normally rests a weighted arm *d*, pivoted loosely at its lower end upon a shaft *e*. The latter carries a pin *e'* and has a notch in which seats the lower end of a rod *x*, whose upper end is jointed to the lower end of a valve-rod *f*², carrying at its upper end a valve *f*, seated within a casing *g*, into which leads a water-inlet pipe *g'*, which is in communication with the tube E⁴, before referred to, and from which casing leads a water-escape pipe *g*².

A tenon *h* is carried by the rod *d* and is adapted to strike the pin *e'* when the rod *d* turns on its pivot, and thereby disengage the rod *x* from the notch by causing the shaft *e* to turn, thus permitting the pressure of water in pipe *g'* to open the valve *f* and escape by way of pipe *g*². The valve *f* prevents, under normal conditions, any escape of water from the supply-pipe *g'* into the pipe connecting with the tube E⁴, thus leaving such connecting-pipe empty. Thus there is no liability of the operation of the apparatus being impaired by the freezing of water in the pipe.

The tubes *i i* are thermostatic tubes supported in cups *j*, carried by a support *j*², the height of which may be regulated by a set-screw *j*³. The tubes *i i* are made of glass sufficiently thin to enable them to be readily broken by the pressure of the water flowing through pipe *g*². The tubes *i i* support a valve-rod *i*⁴, carrying a valve *i*⁵ at its upper end.

Inasmuch as there may be several thermostatic devices located at different points in a building and connected with a single water-re-

leasing device, such as shown in Figs. 4 and 5, it will be obvious that each of said thermostatic devices should be provided with the valve v^5 , so that only that valve v^5 of the thermostatic device in the room in which the fire occurs will be opened to permit the water to be discharged into such room.

When in the event of a fire the heat of the room in which the devices represented in Figs. 1, 2, and 3 are located exceeds the degree hereinbefore mentioned—*i. e.*, 30° or 40° centigrade—the thermostat-bulb E' breaks, whereby the arm A turns and the hook J breaks the tube N to allow the air to enter tube K , and thence enter the receptacle c^2 , causing a quantity of the liquid to overbalance the trough T , which will rock on its pivot, as indicated in dotted lines in Fig. 4, and by the release of the rod x from its supporting-shaft e the valve f descends and permits water to flow by way of pipe g^2 to the devices seen in Figs. 1 to 3, and by the pressure upon the valve v^5 breaks the tubes i and lowers the valve and escapes by pipe g^5 and enters a pipe k , communicating by curved pipes l' with a rose-head l , whence it issues in a spray to extinguish the fire.

I may provide two nozzles $v v'$, located and constructed as seen in Fig. 7, and within the nozzle v locate a diaphragm k' , which serves to check or lessen to some extent the pressure of the water entering said nozzle. By the provision of the nozzles there will be produced a spraying of the water escaping therefrom at their exit-orifices, which provides additional means for insuring the extinguishment of the fire.

What I claim is—

1. The combination with a thermostat a rotatable arm carrying the latter a frangible tube adapted to be broken by the said arm when rotated, an air-tube in communication with the

frangible tube, a counterbalanced rotatable body, a receptacle containing liquid and into which receptacle the air-tube leads said receptacle adapted to discharge into the rotatable body when the frangible tube is broken to effect the tilting of the said body in the manner described, a water-pipe, a valve therein, a rotatable arm adapted to be operated by the tilting body and devices intermediate the arm and the valve adapted to permit of the opening of the valve when the said body is tilted and a discharge-pipe in connection with the water-pipe, all as set forth.

2. The combination with a thermostat, a rotatable arm carrying the latter, a frangible tube adapted to be broken by the said arm when rotated a counterbalanced rotatable body an air-tube in communication with the frangible tube, a receptacle containing liquid and into which receptacle the air-tube leads, said receptacle adapted to discharge into the rotatable body when the frangible tube is broken to effect the tilting of the said body, in the manner described, a water-pipe, a valve therein, the valve-rod, a rod jointed at one end thereto, a shaft having a notch in which the opposite end of said rod seats, a rotatable arm mounted at one end on said shaft and adapted to rotate when the aforesaid body tilts, to cause the shaft to rotate and free the lower end of the jointed rod from the notch and permit the opening of the valve, and a discharge-pipe in connection with the water-pipe, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 10th day of November, 1894.

JOSEPH LOUIS TIRARD.

Witnesses:

VICTOR MATRAY,
FREDERIC MATRAY.