

(No Model.)

D. C. STILLSON.

AUTOMATIC FIRE EXTINGUISHING APPARATUS.

No. 333,171.

Patented Dec. 29, 1885.

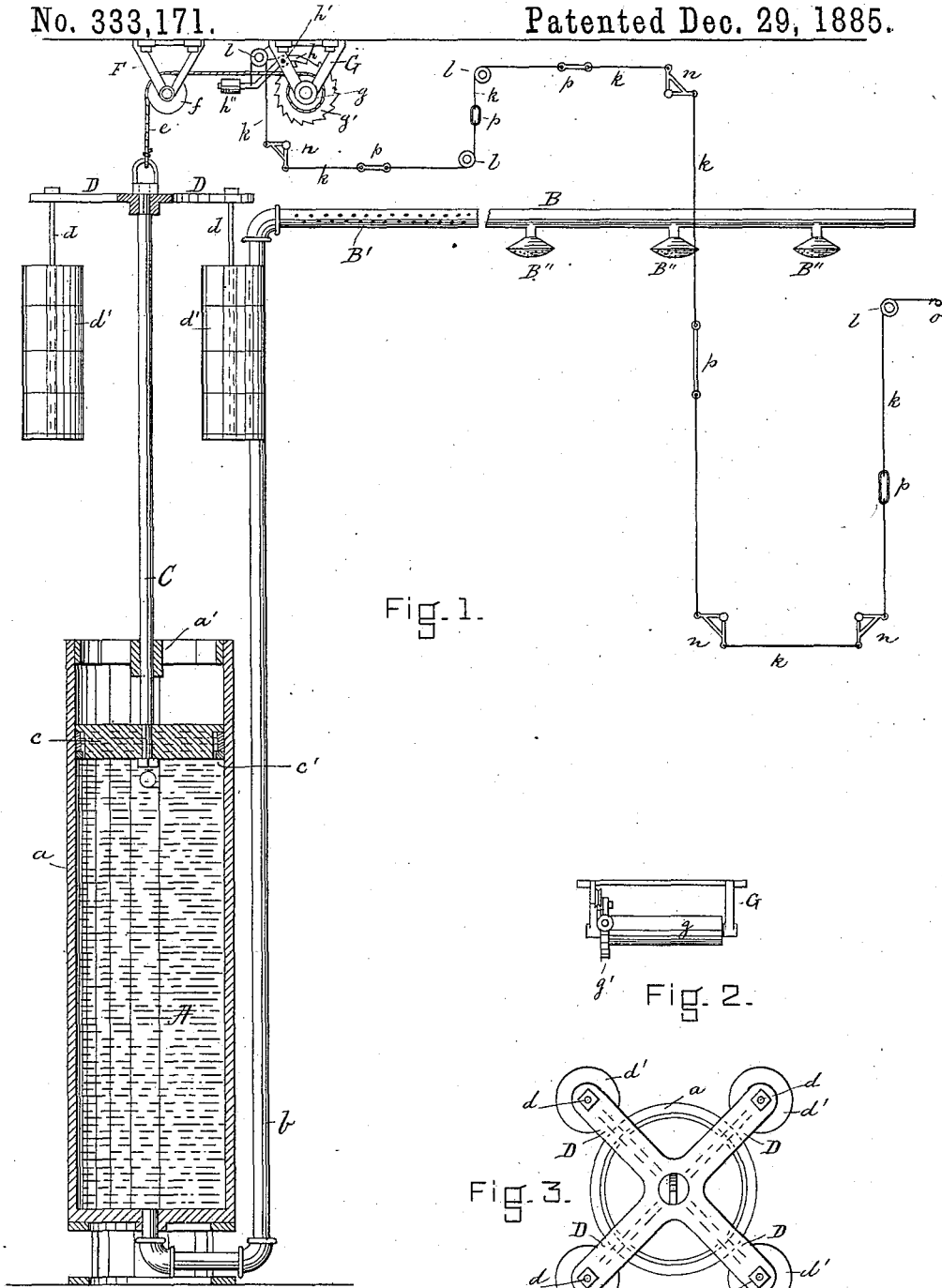


Fig. 1.

Fig. 2.

Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

DANIEL C. STILLSON, OF SOMERVILLE, MASSACHUSETTS.

AUTOMATIC FIRE-EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 333,171, dated December 29, 1885.

Application filed June 11, 1885. Serial No. 168,306. (No model.)

To all whom it may concern:

Be it known that I, DANIEL C. STILLSON, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Automatic Fire-Extinguishing Apparatus; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to improvements in automatic fire-extinguishing apparatus; and it consists of a suitable tank, cylinder, or case containing water or other fire-extinguishing liquid, which is normally kept in such cylinder or case without compression, the said cylinder being provided with a piston having an upwardly-projecting piston-rod, the upper end of which is provided with radial arms, on which are suspended a number of weights, such piston, its rod, and weights being normally suspended by means of a rope or wire leading to a windlass that is prevented from unwinding by means of a pawl and ratchet-wheel, such pawl being normally held in a locked position by means of a wire stretched between said pawl and any desired part of the room. The wire itself may be of fusible metal, so as to melt at a desired temperature; or suitable couplings made of such fusible metal may be secured between the ends of the wire, so as to secure the ends of the wire and the intermediate fusible coupling together until such time that a fire breaks out in the room, when the increased temperature causes the fusible wire or the intermediate couplings thereon to melt, and thereby to release the pawl from the ratchet-wheel on the windlass, allowing the weighted piston to descend under great pressure, and thus to force the fire-extinguishing liquid into a pipe provided with perforations or sprinklers, through which the liquid is forced out to extinguish the fire in the room.

In this my present invention I dispense entirely with valves or cut-offs, that are liable to become rusted or stuck on their seats if held in one position for a long time, and consequently may be found inoperative when most needed in case of a fire. I have also dispensed with pneumatic pressure devices, diaphragms, and air-pumps for compressing air within

pipes provided with fusible metal plugs, combined with weights to release the pawl when the air-pressure in the pipes is reduced by the melting of the fusible plugs, as shown and described in my pending application filed September 24, 1884.

My invention is carried out as follows, reference being had to the accompanying drawings, where Figure 1 represents a sectional side elevation of my improved apparatus. Fig. 2 represents a detail view of the windlass and its bearings; and Fig. 3 represents a plan view of the cylinder and its weighted piston-rod.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

a is the reservoir containing the fire-extinguishing liquid A, as usual, such reservoir being preferably made of a cylindrical form, closed in its lower end and open at the top.

From the lower end of cylinder *a* leads a pipe, *b*, to the sprinkler-pipe B, as shown in Fig. 1. Said sprinkler-pipe may be provided with a number of perforations, B' B', or with perforated or otherwise constructed sprinklers B'' B'', as shown. The terminus of pipe B is to be closed up in the usual manner.

Above the liquid in the cylinder *a* is suspended the piston *c*, preferably provided with a suitable self-setting packing, *c'*, of any ordinary construction.

To the piston *c* is secured the upwardly-projecting piston-rod C, which is preferably guided in the bearing-sleeve *a'*, secured to the upper end of cylinder *a*; or, as an equivalent thereof, a guide disk or head may be secured to piston-rod C above its piston, to serve to properly guide the piston *c* in a linear descent within the cylinder *a* when said piston is released.

To the upper end of piston-rod C is secured a cross or series of radial arms, D D, to the ends of which are suspended by means of rods *d d* the weights *d' d'*, as shown in Figs. 1 and 3. The arms D D are made long enough in a radial direction from the piston-rod C to permit the weights to go outside of the cylinder *a* when the piston-rod is released without coming in contact with said cylinder *a*, as shown in Fig. 3. By so arranging the weights *d' d'*

outside of the cylinder *a*, I am enabled to use more weights as compared with my previous arrangement of locating the weights directly upon the piston within the cylinder, as described in my former application above referred to.

To the upper end of piston-rod C is attached the rope or wire *e*, that is carried over a pulley, *f*, located in bearings F, secured to the ceiling of the room or any stationary part of the latter. Such rope or wire is wound upon and its end secured to the windlass or drum *g*, supported in suitable bearings, G, secured to the ceiling or other part of the room.

To the roller or drum *g* is secured the ratchet-wheel *g'*, adapted to be locked in position by means of a pawl, *h*, hinged at *h'*, and provided in its outer free end with a weight, *h''*. (Shown in Fig. 1.) The pawl *h* is normally held in a locked position relative to the ratchet-wheel *g'* by means of the stretched wire *k*, one end of which is secured to the said pawl, and after being carried to any portion of the room by means of guide-pulleys *l l l* or angles *n n* it is secured to any stationary point at *o*, as shown in Fig. 1. Said wire may be made in whole or part of fusible metal, so as to melt and break the connection between the pawl *h* and end support, *o*, whenever the temperature in the room, in case of a fire, reaches the danger heat, or here and there the wire ends may be connected by means of intermediate eyes, links, &c. *pp*, made of such fusible metal. The wire in such case may be made of iron, brass, copper, or other non-fusible metal, as may be desired.

In Fig. 1 the apparatus is shown in its normal position. If, now, the temperature in the room should rise on account of a fire to such a degree as to cause the fusible connections *pp*, or any one of them, to melt, or should cause the wire *k* itself to melt if made of fusible metal, the pawl *h* will instantly be released from the ratchet-wheel *g'* by the agency of

weight *h''*, (or its equivalent—a spring,) and thus the piston-rod C is also released and caused by its weights *d' d'* to descend, and in so doing the piston *c* will force the liquid A in cylinder *a* through pipe *b*, through sprinkler-pipe B, and out into the room through perforations B' or sprinklers B'' B'', to put out the fire automatically.

If so desired, an alarm of suitable construction may be added to the above and connected by means of a wire or equivalent means, so as to give notice to the watchman or persons in charge that a fire is in the room or building.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In an automatic fire-extinguishing apparatus, the cylinder *a*, with its piston *c* and piston-rod C, on which the weights *d' d'* are suspended, as described, in combination with the pipe *b* B and its perforated sprinklers, the drum *g*, cord *e*, ratchet *g'*, weighted pawl *h*, and connecting-wire *k*, made wholly or in part of fusible metal, as and for the purpose set forth.

2. In an automatic fire-extinguishing apparatus, the following instrumentalities: a liquid-containing receptacle having pipe *b* B, provided with perforated sprinklers, a suspended weighted plunger with weights outside the said receptacle, and a windlass having ratchet and pawl, the latter being normally held locked by means of a stretched wire made wholly or in part of fusible metal and released by the fusing of the latter, so as to cause the plunger to descend and force the liquid from the receptacle through sprinklers connected with said receptacle, as set forth.

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

DANIEL C. STILLSON.

Witnesses:

ALBAN ANDRÉN,
CHARLES H. FOGG.