(No Model.)

W. H. STRATTON.

FIRE EXTINGUISHER.

No. 316,581. Patented Apr. 28, 1885.

Fig. 1.

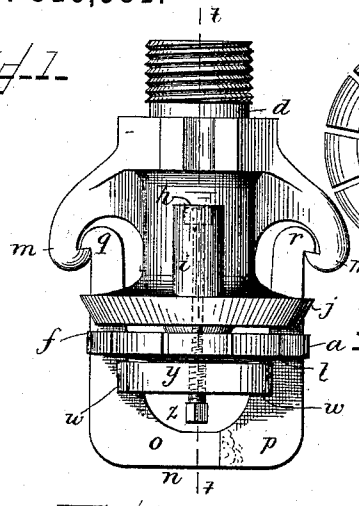

Fig. 16.

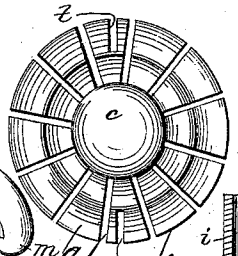

Fig. 2.

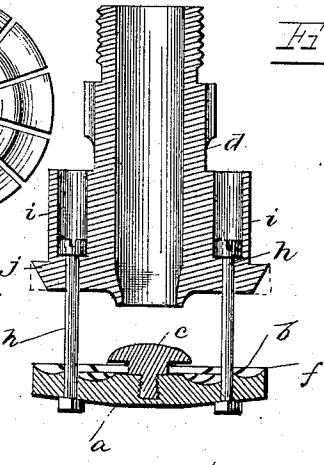

Fig. 3.

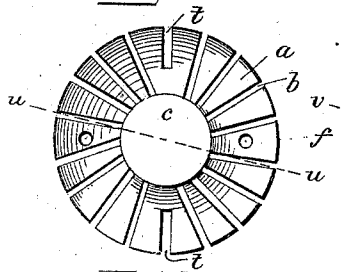

Fig. 4.

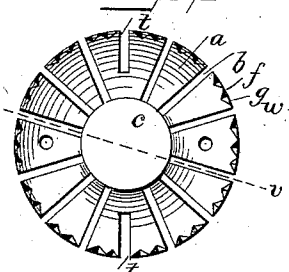

Fig. 5.

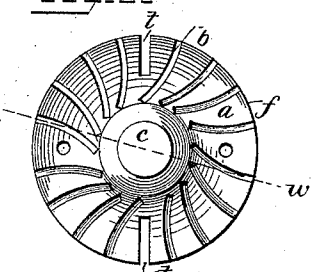

Fig. 6.

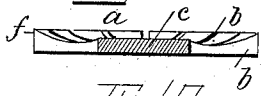

Fig. 7.

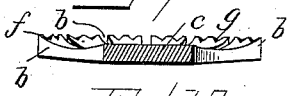

Fig. 8.

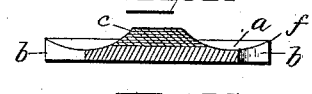

Fig. 9.

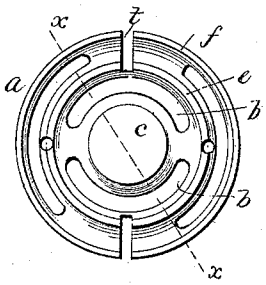

Fig. 10.

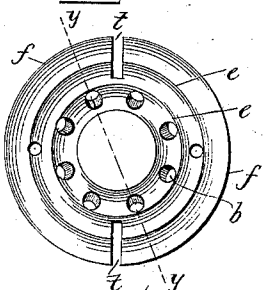

Fig. 11.

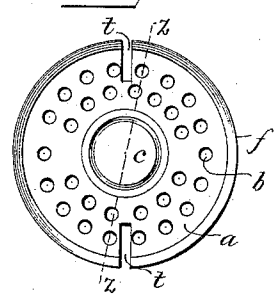

Fig. 12.

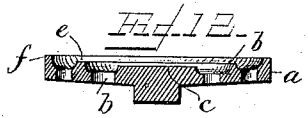

Fig. 13.

Fig. 14.

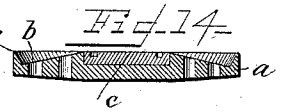

Fig. 15.

WITNESSES

F. L. Ourand.

E. A. Finckel.

INVENTOR:

William H. Stratton

by Wm. H. Finckel

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM H. STRATTON, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO STEPHEN R. SMITH, OF SAME PLACE.

FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 316,581, dated April 28, 1885.

Application filed June 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. STRATTON, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Automatic Fire-Extinguisher Sprinklers, of which the following is a full, clear, and exact description.

This invention relates to that class of automatic fire-extinguishing apparatus which is put up in factories and other buildings as a fixture; and the principal object of the invention is to render more effective the "distributer," so called, or sprinkler in diffusing the water within the space to be covered by it, both above and below it.

To this end the invention consists in a distributing-plate constructed with elevations and openings of such disposition and shape, as hereinafter more particularly set forth and claimed, as to throw the water upward toward the ceiling, outward or laterally, and downward toward the floor, to cover practically the entire space within its radius.

Other objects and features of the invention will be hereinafter more fully described and claimed.

In the accompanying drawings illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a side elevation of a sprinkler; Fig. 2, a vertical cross section, partly mutilated, in the plane of line *t t*, Fig. 1, the sprinkler being closed in Fig. 1 and opened or unsealed in Fig. 2. Figs. 3, 4, and 5 are top plan or face views of three several forms of distributing-plates; and Figs. 6, 7, and 8, sections thereof in the planes of lines *u u*, *v v*, and *w w*, respectively, of said figures. Figs. 9, 10, and 11 are top plan or face views of three other forms of distributing-plates; and Figs. 12, 13, and 14, sections thereof in the planes of lines *x x*, *y y*, and *z z*, respectively, of said figures. Fig. 15 is an edge view of the plate shown in Figs. 5 and 8; and Fig. 16 is a top plan view of the distributing-plate of Figs. 1 and 2.

In order to discharge or direct the extinguishing-fluid upon the floor beneath the sprinkler, I form the distributing-plate *a* with a number of slots, *b*. In Figs. 1, 4, and 16 these slots are radial and extended from the sealing face or valve *c* to the rim. Instead of radial slots, there may be slots substantially tangential to the valve *c*, as in Fig. 3, or they may be sections of spirals, as in Fig. 5, and overlapping, as indicated in said figure, and more fully shown in Fig. 15; or they may be concentric, as in Fig. 9; or, instead of slots, I may use holes or perforations *b*, Figs. 10 and 11, at an incline to the plane of the plate or straight through the same, as shown, respectively, in said figures. With any such construction the water, in issuing from the nozzle *d*, strikes the plate and part of it escapes through said slots, perforations, or holes and wets the floor beneath it.

To arrest the tendency of the water to slip laterally from the plate, I prefer to use annular ridges or elevations *e*, one or more in number, on the face of the plate, by which the stream of water is broken up and a larger proportional quantity directed through said slots or openings, and I give to the rim of the plate an upward curvilinear turn, *f*, by which the water is directed upward and outward laterally from said plate to wet the ceiling. The lateral distribution of the water may be increased by dividing it into streams by notches *g* in the rim-turn *f*, Figs. 4 and 7. The value of this slotting of the distributing-plate is specially noticeable in those sprinklers which are set in inverted positions to discharge upward, the slots in such instance distributing the water more effectually upon the ceiling.

The distributer-plate is best connected with the nozzle or sprinkler by means which will least obstruct and disturb the spray or stream, and hence I suspend my plate by pins *h* on opposite sides of the nozzle, which pins may be tapped in the plate or secured by nuts or otherwise, they being of the smallest possible diameter consistent with strength. These pins are protected from deflection and damage by being inclosed in wells *i*, made with or on the nozzle. The heads of the pins, which may be round, square, or other shape, serve to regulate and sustain the plate in its position at the proper distance.

To exclude dust or dirt and to prevent corrosion, the top of the wells may be covered over or plugged or sealed, the wells serving to guide and steady the pins when the plate

descends. The plates are held up against the nozzles by the separable yoke *n*, as set forth in my Letters Patent No. 306,662, granted October 14, 1884, parts herein corresponding with like parts therein being similarly designated, *o p* being the yoke members, which have hooked ends *q r* to engage the hooks *m* of the nozzle, the said members engaging slots *t* in the plate *a*, and like slots (not shown) in the plate *j*, and having shoulders *w* to receive the straining-bar *y*, and temper-screw *z* for holding the plate *a* sealed upon the mouth of the nozzle. I find that the best results are obtained by giving the nozzle an unobstructed water-way; hence I make such way either slightly contracted, but with plane surfaces, as shown in Fig. 2, or its walls may be parallel throughout.

In most cases the seat or valve *c* of Figs. 2, 4, 6, 7, 9, 10, 11, 12, and 13 will suffice, but in some cases the valve may be a teat of lead, *c*, as in Figs. 5 and 8, or a flat or ribbed or grooved disk, *c*, of soft metal, as in Fig. 14, to securely close the sprinkler. I also find that a dome-shaped piece, *c*, Figs. 2 and 16, when placed on the center of any of the plates having the annular ridges or elevations *e* and slots or perforations *b*, produces a more perfect downward distribution of water. This dome-shaped piece may be made of soft metal, so as to serve as the valve, or the valve may be separate and placed upon it. The sprinkler is opened by a dangerously high temperature melting the solder of the separable yoke, permitting it to fall away from the nozzle, and permitting the plate *a*, by gravity or under the pressure of the water, to descend to the limit of the length of the pins in the wells, said pins holding the plate in place beneath the issuing stream. Two or more suspending-pins may be used.

I do not limit my invention herein to the use of the separable sealing-yoke, although I regard it as one of the best devices in use for such purpose.

The deflecting-plate *j* may have its edge beveled, as shown in full lines, Figs. 1 and 2, or it may be squared, as indicated in dotted lines, Fig. 2, conformably with the direction in which it is desired to throw the large quantity of water.

The conformation of the active face of the distributing-plate *a* may be variously modified, as clearly shown in the several views herein; but I deem it essential to good results in distributing the water to make it somewhat dishing or saucer-like, and broken or not by ridges *e*.

What I claim is—

1. In a sprinkler for automatic fire-extinguishers, the distributing-plate provided with the fixed central elevated sealing seat or valve, *c*, the openings *b*, extending through and through the said plate, and a circular ridge concentric with the valve, combined with a separable yoke, substantially as and for the purpose described.

2. The combination, with the nozzle and its wells, of a distributing-plate and pins arranged in said wells and connected with the plate to suspend it from the nozzle, substantially as described.

3. The combination, with the nozzle, of a distributing-plate having openings from face to back and elevations or ridges standing up from its active face and a dome-shaped raised piece or valve, substantially as described.

4. The combination, with a nozzle, of a distributing-plate having concentric ridges or elevations on its active face and a terminal or rim ridge and openings from face to back and a dome-shaped raised piece or valve, and means to suspend the plate from the nozzle, substantially as described.

5. The combination, substantially as shown and described, with the nozzle having an unbroken water-way, a deflecting-plate, and wells, of the distributing-plate provided with openings from face to back and a dome-shaped raised piece or valve, pins in said wells and connecting the nozzle and plate, and a separable yoke engaging the nozzle and plate to seal the nozzle and to open it upon occasion of fire, substantially as described.

In testimony whereof I have hereunto set my hand this 31st day of May, A. D. 1884.

WILLIAM H. STRATTON.

Witnesses:
STEPHEN R. SMITH,
GEO. A. ROOT.