(No Model.)

C. J. WILLIAMS.

COOLING IRON STRUCTURES.

No. 472,746. Patented Apr. 12, 1892.

Fig. 1.

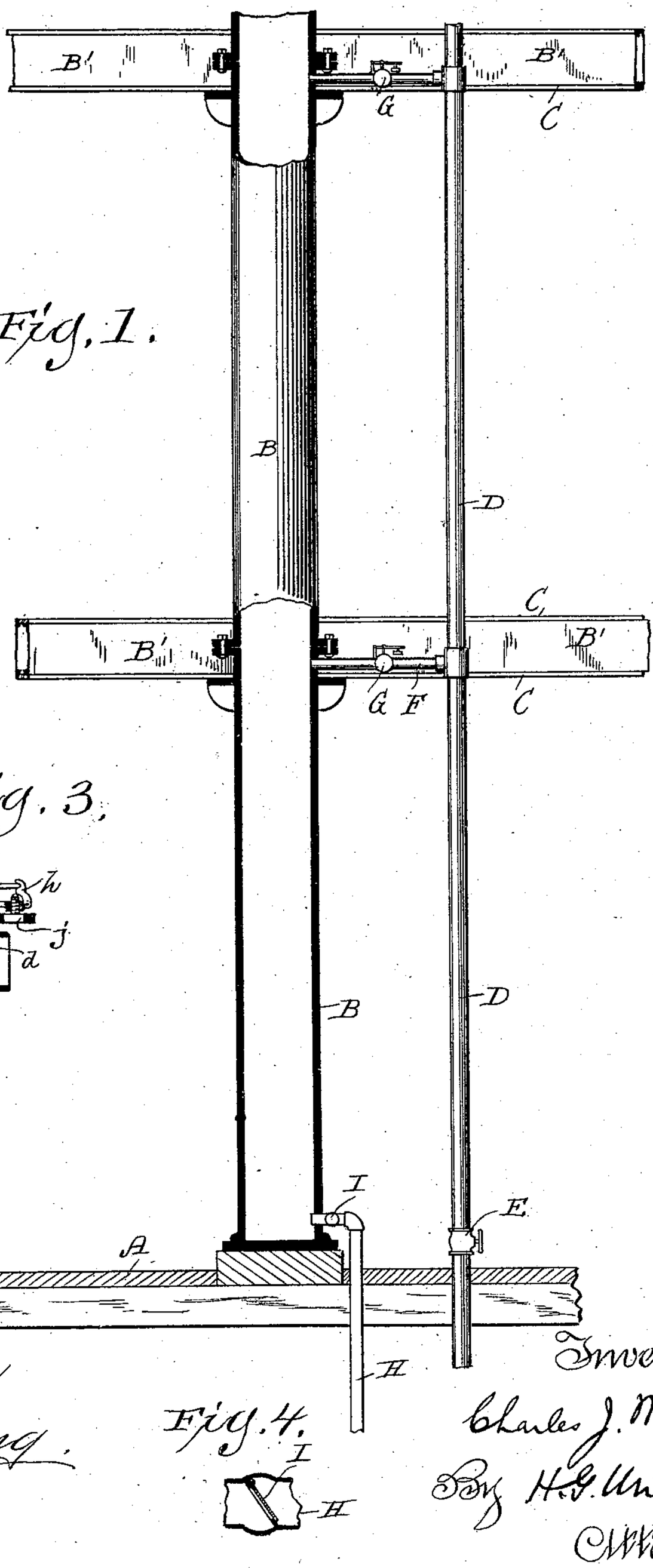

Fig. 2.

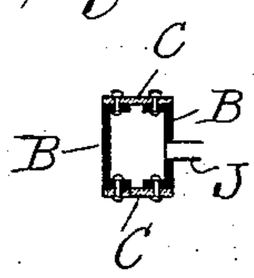

Fig. 3.

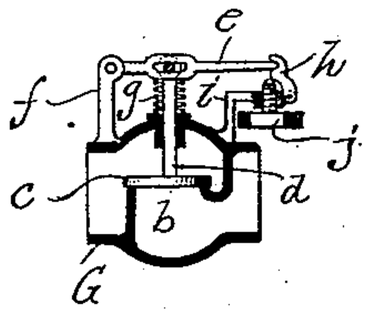

Fig. 4.

Witnesses/
Geo. W. Young.
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UNITED STATES PATENT OFFICE.

CHARLES J. WILLIAMS, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF TO WILLIAM WAGNER, OF SAME PLACE.

COOLING IRON STRUCTURES.

SPECIFICATION forming part of Letters Patent No. 472,746, dated April 12, 1892.

Application filed August 21, 1891. Serial No. 403,343. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. WILLIAMS, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Cooling Iron Structures; and I do hereby declare that the following is a full, clear, and exact description thereof.

In large buildings using hollow iron columns and iron girders it happens that in case of conflagration such iron-work is materially weakened by heat and, generally speaking, becomes too rotten to support the upper floors and walls. Consequently there is oftentimes a loss of property and life that might have been saved.

The object of my invention is to keep the iron-work (especially the hollow columns) cool in case of conflagration of a building containing the same, and thereby overcome the tendency of said iron-work to weaken or rot as a result of heat, this object being attained by the construction and arrangement of parts, to be hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 is a representation of my invention, the necessary parts embodied therein being shown in elevation and partly broken away. Fig. 2 is a transverse section showing two ⊐-girders joined together to form a channel; Fig. 3, a detail view of a thermally-controlled valve, and Fig. 4 a detail view showing a check-valve between a hollow iron column and a waste-pipe.

Referring by letter to the drawings, A represents the main support for a series of hollow iron columns B, of ordinary construction, only one of these columns being shown. At various elevations iron girders B′ are joined to the columns A in any suitable manner, and these girders may be of any of the various forms, although it may be preferable to unite two ⊐-girders by means of plates C, bolted to their lateral portions to thus form a channel-girder such as is clearly illustrated in Fig. 2.

Extending up through the building of which the above-described iron-work forms a part is a riser D, that is connected with a water-service pipe, (not shown,) and the admission of water to the riser is controlled by a valve E, as is usual in water-distributing systems. Leading from the riser to the hollow iron column B at various elevations are branches F, normally cut off by thermally-controlled valves G, of any suitable construction. As shown in Fig. 3, each thermally-controlled valve may comprise a coupling having the water-inlet *b* thereof normally closed by a cap *c*, from which extends a rod *d*, connected to a lever *e*, this lever being pivoted to a bracket *f* on the coupling and held down against the resistance of a spiral spring *g* by means of a latch *h*, that is pivoted to another bracket *i* on said coupling, the latter bracket also serving as a support for a thermo-motor *j*, of the well-known variety, comprising a chamber provided with a piston and filled behind the piston with a material that is fixed and solid under ordinary temperatures, but which softens and expands under heat and drives the piston forward. In this particular instance a forward movement of the piston would act upon the latch *h* in such a way as to swing the latter on its pivot, thereby releasing the lever *e* and permitting the spring *g* to expand and cause an upward movement of said lever to lift the cap *c* from its seat. The result of this automatic operation would be to open communication between the riser D and column B, and thus permit a flow of water in said column to keep the latter cool during a conflagration in a building of which it forms a part, the accumulating water in the aforesaid column being drained off through a waste-pipe H, designed to connect with a sewer. I prefer to provide the waste-pipe H with a flap-valve I, that opens only in an outward direction, whereby any backing up of water from a sewer into the column is prevented.

It is to be understood that I do not propose to keep the hollow iron columns filled with water, but to simply flood them during a conflagration in the building of which they form parts, and to this end it is desirable that the valves I in the waste-pipes H shall be seated against the rise of gas or water from the sewer, although free to yield against a flow of water let into said columns from the independent circulating system.

As best illustrated in Fig. 2, a branch J

leads from the riser D to the channel-girder above described, and it is obvious that thermally-controlled branches may be extended along girders of any pattern for the purpose of distributing water in such a manner as to keep said girders cool during a conflagration in a building of which they form a part.

A thermo-motor of the kind above described forms the subject of Letters Patent No. 367,244, issued July 26, 1887, to Wm. C. Shaffer.

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

1. The combination, with a hollow iron column, of a water-distributing system having one or more outlets into the column and a thermally-controlled valve governing each outlet, whereby the latter will be automatically opened to said column at a time when the valve may be affected by a certain degree of temperature, substantially as set forth.

2. The combination, with a hollow iron column, of a water-distributing system having one or more outlets into the column, a thermally-controlled valve governing each outlet, whereby the latter will be automatically opened to said column at a time when the valve may be affected by a certain degree of temperature, a waste-pipe leading from the aforesaid column, and a one-way valve controlling the waste-pipe, substantially as set forth.

3. The combination, with a hollow iron column and girders connected thereto, of a water-distributing system having branches leading to the column and girders and a thermally-controlled valve governing each branch, whereby the latter will be automatically opened at a time when the valve may be affected by a certain degree of temperature, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

CHAS. J. WILLIAMS.

Witnesses:
N. E. OLIPHANT,
WM. KLUG.