

No. 816,352.

PATENTED MAR. 27, 1906.

H. T. MURPHY.
FIRE EXTINGUISHER.

APPLICATION FILED JAN. 20, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

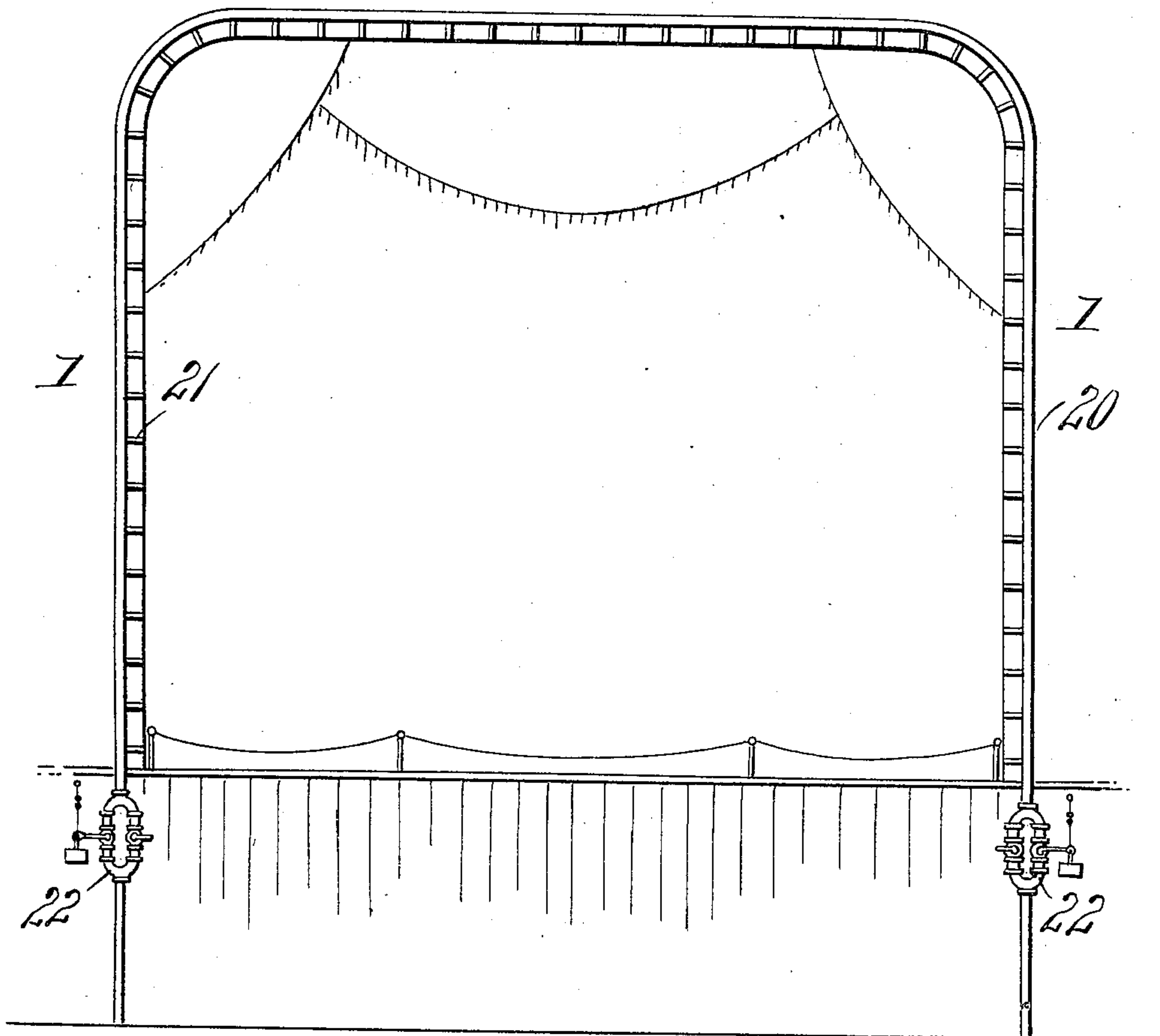


Fig. 4.

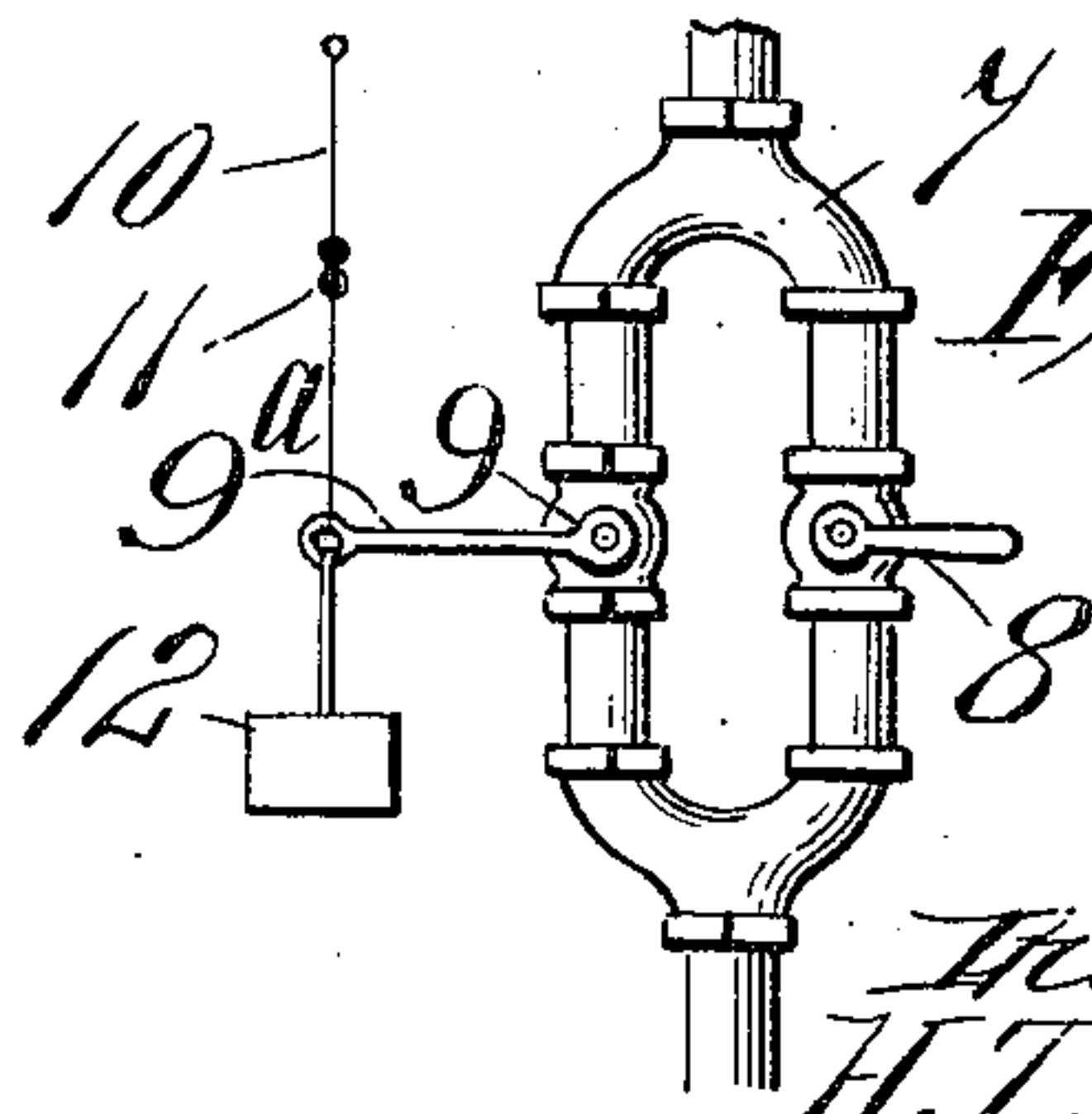
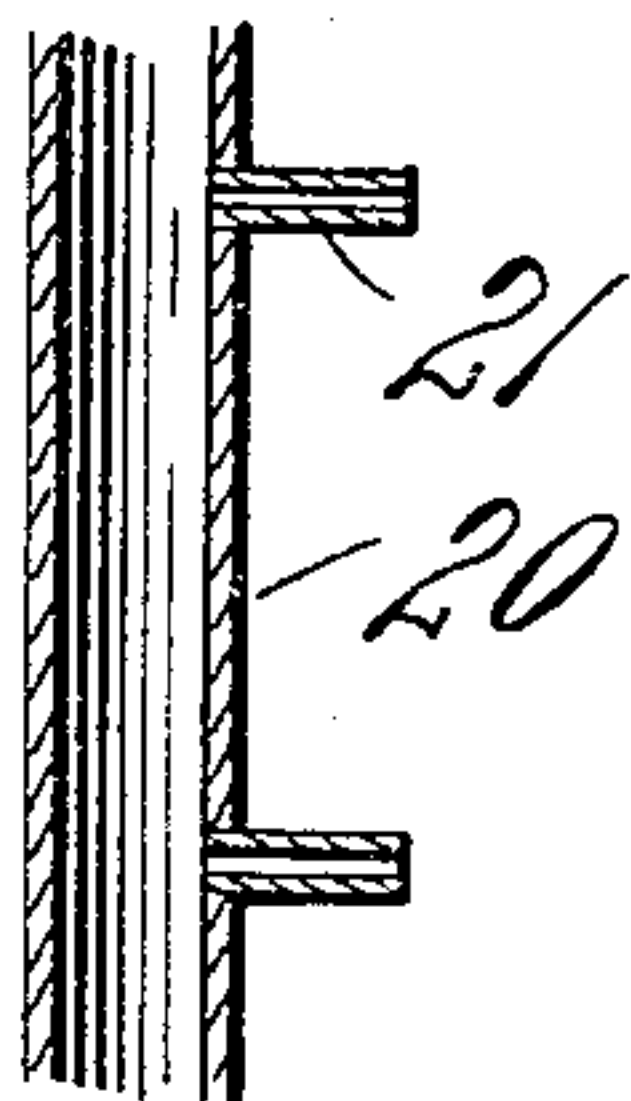


Fig. 3.

Witnesses:
John Gayfield
G. R. Driscoll

Inventor
H. T. Murphy.
by *J. S. Bell*
Attorney.

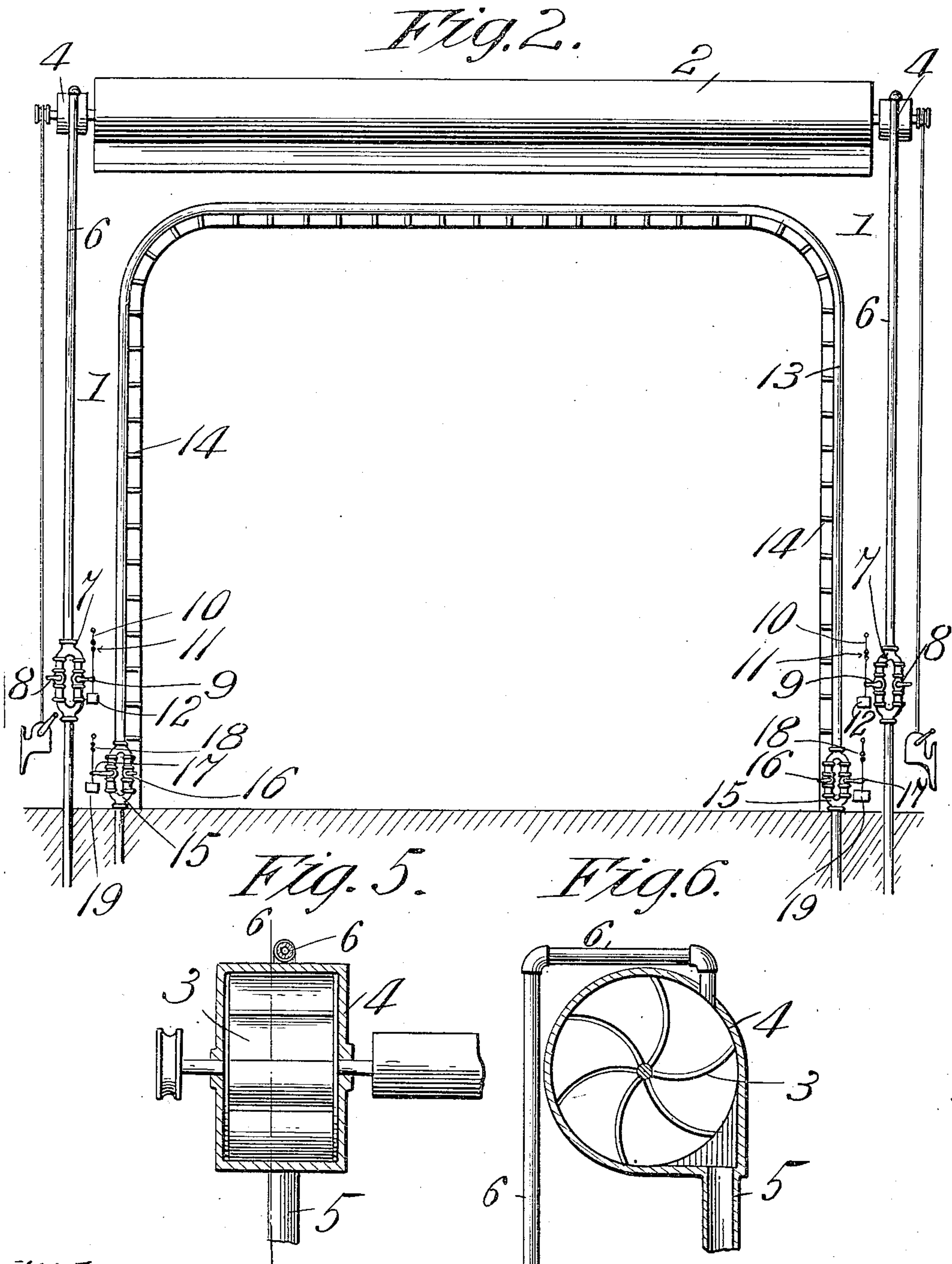
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3 SHEETS—SHEET 2.



Witnesses:
J. B. Gentry
G. A. Driscoll.

Inventor
H. T. Murphy.
by J. B. Gentry
Attorney.

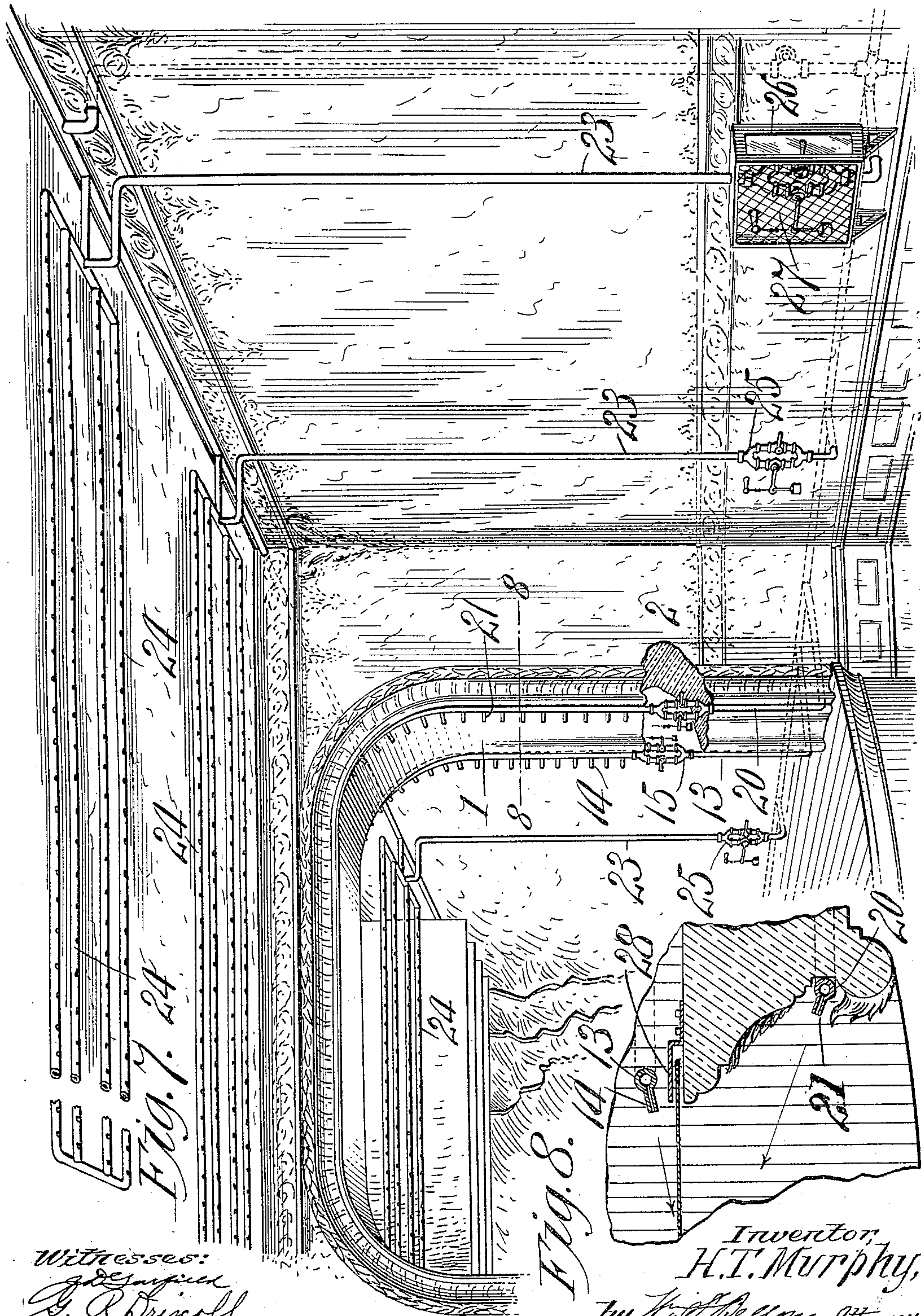
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3 SHEETS—SHEET 3.



Witnesses:
G. R. Driscoll.

Inventor,
H. T. Murphy,
by W. O. Nelson, Attorney.

UNITED STATES PATENT OFFICE.

HAROLD T. MURPHY, OF SPRINGFIELD, MASSACHUSETTS.

FIRE-EXTINGUISHER.

No. 816,352.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed January 20, 1905. Serial No. 241,960.

To all whom it may concern:

Be it known that I, HAROLD T. MURPHY, a citizen of the United States of America, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a full, clear, and exact description.

My present invention relates to certain new and useful improvements in fire-extinguishing apparatus, especially adapted for use in theaters, music-halls, and other similar structures; and its object is to provide a system of sprinkling devices having a novel arrangement of valves located adjacent the floor of the structure and which are adapted to operate automatically when the temperature reaches a predetermined degree or which may be operated manually when desired.

Another object of the invention is to provide a novel arrangement of water-outlets located about the proscenium-arch and which are adapted when in operation to form a water-curtain to prevent passage of smoke and flames through the arch.

Another object of the invention is to provide hydraulic means for automatically lowering the curtain when the temperature reaches a predetermined degree and for simultaneously discharging water through the sprinkling devices.

With the above and other objects in view the invention consists of water-conducting pipes, which are arranged adjacent the edge of the proscenium-arch, at opposite sides thereof, and which have outlet-nozzles adapted to discharge streams of water in various directions, so as to produce a water-curtain. Within each of these pipes at opposite sides of the arch and adjacent the floor are two valves, one of which is adapted to be operated manually, while the other is provided with means whereby it may be opened automatically. Pipes containing a large number of these nozzles may also be employed at various points on the ceiling of the auditorium and stage of the theater, and each feed-pipe may be provided with the same type of valves above referred to. The curtain is arranged in rear of the arch and is adapted to pass between the water-pipes adjacent the arch, and this curtain is adapted to be operated automatically by water, which is discharged upon

wheels connected to the curtain, or said curtain may be operated manually when desired.

The invention also consists in the further novel feature of construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the proscenium-arch of a theater, showing my improved arrangement of extinguishing apparatus. Fig. 2 is a rear elevation of the arch, showing the rear sprinkler and the pipes for conducting water to the wheels of the curtain. Fig. 3 is an enlarged elevation of one pair of valves. Fig. 4 is an enlarged section through a portion of one of the sprinkler-pipes. Fig. 5 is a transverse section through the casing of one of the water-wheels of the curtain. Fig. 6 is a section on line 6 6, Fig. 5. Fig. 7 is a perspective view of the interior of a part of a theater or music-hall looking toward the stage and proscenium-arch, and Fig. 8 is a section on the line 8 8 of Fig. 7.

Referring to the drawings, the reference-numeral 1 indicates a proscenium-arch having a curtain 2 mounted in rear thereof and adapted to be lowered either by hand, through the medium of a windlass, as shown, or wheels 3. Each of these wheels is revolvably mounted within a casing 4, having an outlet-pipe 5 and a supply-pipe 6, which opens into each casing and extends from a suitable source of water-supply. Arranged within each supply-pipe 6, adjacent the floor of the stage, is a valve-casing 7, having two similar branch passages therein, each of which is normally closed by a valve 8 and 9, respectively. The valve 9 is supported from the adjoining wall of the arch or other portion of the theater by rods 10, which are connected by links or other suitable devices 11, of fusible material, and a weight 12 depends from an arm 9^a on the stem of valve 9 and is adapted to open the valve automatically when the supporting-rods 10 thereof are separated.

Arranged about the arch 1, in rear thereof and in rear of the curtain 2, is a pipe 13, the ends of which are connected to a suitable source of water-supply, and this pipe closely follows the outline of the arch. Nozzles 14 extend from the inner face of the pipe and are so positioned as to direct streams of water

across the arch. Communicating with the pipe 13 at a point adjacent the floor of the theater and at opposite sides of the arch are valve-casings 15, similar to the casings 7 before described, each casing having two branch passages therein, both of which are closed by valves 16 and 17, as shown. The valves 17, like the valve 9, are normally supported by fusible links 18, from which depend the weights 19, as before described. Arranged outside the proscenium-arch is a water-supply pipe 20, which closely follows the outline of the arch and has an arrangement of nozzles 21 which are similar to the nozzles 14 and are adapted to direct jets of water across the arch. This pipe 20 has a valve-casing 22 therein at each side of the arch, and each casing is provided with valves, fusible links, and weights similar to the casings 7 and 15.

I am aware that it is old to arrange nozzles upon the ceiling of a structure, said nozzles being provided with caps of fusible material adapted to be melted when the temperature reaches a predetermined degree. This construction, however, has been found to be objectionable where the ceiling is at a great distance from the floor, as in a theater, for the reason that a fire can gain considerable headway before the temperature reaches such a degree as to melt the caps on the nozzles. With my arrangement of extinguishing apparatus, however, the valves controlling the supply of water to the open nozzles are located adjacent the floor, where they can be operated either manually by turning the valves 8 and 16 or automatically by the heat melting the fusible links 11 and 18, thereby permitting the weights 12 and 19 to open the valves 9 and 17. In the event of a fire the water will either be turned on automatically or manually before the flames can gain any considerable headway, and the water will thus be discharged in large jets from the numerous nozzles 14 and 21 and will produce a water curtain which will form an efficient barrier against the passage of smoke and flames through the arch. This will provide efficient protection to the audience even though the curtain 2 should fail to be lowered. However, the same arrangement of valves is provided for lowering the curtain, and when either the valves 8 or 9 are open the water will be discharged upon the blades of the wheels 3 and will cause said wheels to rotate and lower the curtain 2 between the pipes 13 and 20. Said curtain will thus be used as an additional barrier against the spread of the flames and will be kept moist on both faces by the water discharged through the nozzles 14 and 21.

While the apparatus herein described is especially adapted for discharging water adjacent the proscenium-arch, yet it will be understood that the same arrangement can

be made at various points within the auditorium and upon the stage, as more clearly shown in Fig. 7, thus permitting the water to be promptly discharged at any suitable point within the theater in the event of a fire. Referring to this figure, the numerals 23 designate supply-pipes which communicate at their upper ends with a plurality of sprinkler-pipes 24, located adjacent the ceiling of the auditorium and above the stage of the theater, said sprinkler-pipes 24 being supported in any suitable manner. Communicating with each supply-pipe 23 and located near the floor of the auditorium or stage is a valve-casing 25, having branch passages and valves controlled automatically by fusible devices and weights and also controlled manually precisely like the valves 8 and 9, heretofore described and more clearly shown in Fig. 3. If desired, all the valve-casings may be inclosed in a housing, such as shown at 26, Fig. 7, said housing being provided with a front of reticulated material 27, that will not obstruct the passage of heat or flame or retard the melting action of the fusible devices.

In Fig. 8 I have shown the edge of the curtain 2 as protected by a vertically-extending plate 28; offset from the arch along one edge and secured to the arch along its other edge. These plates are of course arranged at opposite sides of the arch and not only protect the edges of the curtain, but will prevent the same from swinging back over the stage, which might occur in case of a fire in the auditorium by reason of drafts and air-pressure caused thereby.

In the foregoing description and drawings I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing any of the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

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

1. In a fire-extinguishing apparatus, the combination with sprinkling-pipes, of a supply-pipe communicating therewith, a valve-casing connected to the supply-pipe and provided with branch passages, a valve in each branch passage, means acting normally to impart an opening movement to one of said valves, and a fusible device for holding the valve-opening means against operation during normal temperature conditions.

2. In a fire-extinguishing apparatus, the combination with sprinkling-pipes, of a supply-pipe communicating therewith, a valve-casing connected to said supply-pipe and having branch passages, a normally closed valve in each branch passage, automatic means for opening one of said valves, a fusible

device for holding said opening means against operation and manually-operable means for the other valve.

3. In a fire-extinguishing apparatus, the combination with the sprinkling-pipes, arranged adjacent the ceiling of a building, of a supply-pipe communicating with the sprinkling-pipes, a valve-casing connected to said supply-pipe and having branch passages, said casing being located adjacent the floor of the building, a normally closed plug-valve in each branch passage, automatic means for operating one of said valves, a fusible device for holding said means against operation, and manually-operable means for the other valve.

4. In a fire-extinguishing apparatus, the combination with the sprinkler-pipes, of a supply-pipe communicating therewith, a valve-casing connected to said supply-pipe and having branch passages, a normally closed valve in each branch passage, a weight suspended from the stem of one of said valves and normally acting to open the latter, a fusible support for said weight, and manually-operable means for the other valve.

5. The combination with an arch, of sprinkler-pipes following the outline thereof, a supply-pipe for said sprinkler-pipes, a curtain adjacent one face of the arch and adapted to be lowered to close the arch-opening, water-wheels connected to and adapted when rotated to lower the curtain, a casing for each water-wheel, a supply-pipe therefor, a valve-casing in each of the supply-pipes, valves in said supply-pipes, and means for automatically opening the valves to lower the curtain and discharge water from the sprinkler-pipes.

6. The combination with an arch, of a supply-pipe following the outline of the arch-opening, discharge-nozzles extending from the supply-pipe and directed toward the opening through the arch, valve-casings at opposite sides of the arch communicating with the supply-pipe, each casing having branch passages therein, and a normally closed valve in each branch passage, one of said valves at each side of the arch being adapted to be opened manually and independently of the others, and the latter adapted to be opened automatically by the action of heat.

7. The combination with an arch having a curtain adjacent one face thereof, of supply-pipes adjacent opposite faces of the arch and following the outline of the opening of the arch, said pipes being adapted to receive the curtain therebetween, discharge-nozzles extending from the pipes and adjacent the opening of the arch, valve-casings within the pipes at opposite sides of the arch and adjacent the bottom thereof, each casing having passages therein, and a normally closed valve

in each passage, one of said valves being adapted to be opened manually and independently of the other valve, which is adapted to be opened automatically by the action of heat.

8. The combination with an arch having supply-pipes adjacent opposite faces thereof, and outlet-nozzles extending from the pipes and adjacent the edges of the arch; of a curtain adjacent one face of the arch and adapted to be received between the pipes, water-wheels connected to and adapted when rotated, to lower the curtain, a casing for each wheel, a supply-pipe therefor, a valve-casing in each of the supply-pipes, valves therein, and means for automatically opening the valves to lower the curtain and discharge water from the nozzles.

9. The combination with an arch having supply-pipes adjacent opposite faces thereof, and outlet-nozzles extending from the pipes and adjacent the edges of the arch, of a curtain adjacent one face of the arch and adapted to be received between the pipes, water-wheels connected to and adapted when rotated, to lower the curtain, a casing for each wheel, a supply-pipe therefor, a valve-casing in each of the supply-pipes, each casing having passages therein, a normally closed valve in each passage, a weight supported by one of the valves of each casing, and a fusible support for each weight.

10. In a fire-extinguishing apparatus, the combination with a sprinkling-pipe, of a supply-pipe communicating therewith, a valve-casing combined with the supply-pipe and provided with branch passages, a manually-operable valve in one of said passages, and an automatically-operable valve in the other passage.

11. In a fire-extinguishing apparatus, the combination with sprinkling-pipes, of a supply-pipe communicating therewith, a valve-casing combined with the supply-pipe and provided with branch passages, a manually-operable valve in one of said passages, an automatically-operable valve in the other of said passages, and fusible means the destruction of which permits the operation of the automatically-operable valve.

12. In a fire-extinguishing apparatus, the combination with a sprinkling-pipe, of a supply-pipe communicating therewith, a valve-casing combined with said supply-pipe, located adjacent the floor of the building and provided with branch passages, a manually-operable valve in one of said passages and an automatically-operable valve in the other of said passages.

13. The combination with an arch, of a sprinkler-pipe conforming to the outline thereof, a supply-pipe for said sprinkler-pipe, a curtain arranged upon a roller and adapted to be lowered to close the arch-opening, said

roller being provided with means whereby it is rotated by water discharged from said sprinkling-pipe to lower the curtain.

14. The combination with an arch of a
5 sprinkler-pipe conforming to the outline thereof, a supply-pipe for said sprinkler-pipe, a curtain arranged upon a roller and adapted to be lowered to close the arch-opening, said
10 roller being provided with means whereby it is rotated by water discharged from said

sprinkling-pipe to lower the curtain, and means for manually lowering said curtain.

Signed by me at Springfield, Massachusetts, in presence of two subscribing witnesses.

HAROLD T. MURPHY.

Witnesses:

WM. S. BELLOWS,
G. R. DRISCOLL.