

v.35F, no.7-33
EDWARD BARR CO., LIMITED, *ET AL.* V. NEW YORK & N. H. AUTOMATIC
SPRIKKLER CO.

Circuit Court, S. D. New York.

July 18, 1888.

PATENTS FOR INVENTIONS—AUTOMATIC FIRE-
EXTINGUISHER—INFRINGEMENT.

The first claim of letters patent No 307.466, issued to Frank Gray, November 4, 1884, for improvements in automatic fire-extinguishing apparatus, and letters patent No. 357,987, issued to said Gray for a modification of the above, February 15, 1887, consisting of a system of pipes provided with nozzles or distributors in which the pipes run from a supply-pipe of water under pressure throughout the building to be protected, and are controlled by a valve located between the supply and distributing pipes, which is opened by the influence of heat, are not infringed by a device which contains the supply and distributing pipes, and the valve, and also an independent pipe leading from the building or apartment to be protected to a chamber in which the valve is located, which pipe is sealed with a sensitive solder in the apartment to be protected, the melting of which: destroys a vacuum in the pipe, thus releasing a diaphragm, and opening the valve.

In Equity. On bill for infringement of patents.

Philip R. Voorhees, for complainants.

Edmund Wetmore, for defendant.

WALLACE, J. The two patents in suit cover improvements in automatic fire-extinguishing apparatus, and belong to what is known as the "Dry Pipe System," which consists generally of a system of pipes provided with nozzles or distributors in which the pipes run from a supply-pipe of water under pressure throughout the building or apartment to be protected. The system is controlled by a valve located between the supply-pipe and the distributing pipes, which cuts off the passage of water from the former to the latter, and is held closed by some device which may be actuated by the influence of heat generated in the apartment to be protected, so that when fire occurs the heat acting upon the device communicates its action to the valve, and causes it to open and permit the water to flow from the supply-pipe to the distributing-pipe, and thence to the apartment to be protected, where it is discharged to extinguish the fire. The first patent is No. 307,466, granted to Frank Gray, November 4, 1884. The claim of this patent alleged to be infringed is the first claim, and is as follows:

"In a system of water-distributing pipes for the automatic extinguishment of fires, an independent pipe for conveying compressed air upon a valve situated between said air pipe and a water-distributing pipe, and excluding the water and said air from said distributing-pipe, whereby the water is admitted to said distributing-pipe when the air is released from said air-pipe, substantially as and for the purposes set forth."

The second patent is No. 357,987, granted to Frank Gray, February 15, 1887. It contains a single claim, which is as follows:

EDWARD BARR CO., Limited, et al. v. NEW YORK & N. H. AUTOMATIC SPRINKLER
CO.

“In a fire-extinguishing apparatus, in combination with an air-exhausted chamber and pipe provided with a closed aperture or apertures fitted to open *for the* entrance of air, a water-supply pipe provided with a stop-valve, and a

holding and tripping device for said valve, whereby, when the exhaustion in said chamber or pipe is destroyed, said stop-valve is released, and water admitted from the supply-pipe to a discharge-pipe for the extinguishment of fire, substantially as and for the purposes set forth.”

Both patents describe a modification of the devices shown in the United States patent to Frederick Grinnell, granted November 8, 1881. That patent illustrates the prior state of the art sufficiently, without further references to show the features of novelty adopted by Gray, and to denote the real character of his inventions, and the true scope of the claims of his patents in controversy. The Grinnell patent describes an automatic fire-extinguishing apparatus, which consists of a supply-pipe, a system of distributing-pipes, running to the apartment or apartments to be protected, combined with a valve between the supply and distributing pipes, which, being closed, holds the water in the supply-pipe, and prevents its passage to the distributing pipes. The valve is held in its closed or normal position by a latch or dog. In connection with the distributing-pipe is a chamber, provided with a diaphragm, into which there is a passage from the distributing pipes. The diaphragm is a device which is provided to trip the valve. The specification describes the distributing-pipes as supplied with an air-pressure less than the pressure of water in the supply-pipe by means of an air-pump. This pressure of air acts upon the diaphragm in the chamber, which communicates to the supply-pipe, so as to support the diaphragm in its normal position. The trip for the valve is in connection with the diaphragm, so that while the diaphragm is under the control of the air pressure the valve is held in its closed position, but as soon as the distributing-pipes are opened by the opening of a fusible seal by the heat in the apartment to be protected, the air escapes, the diaphragm is released, the trip disengages the valve, and thereby the water is liberated, to flow through the distributing-pipes, and is discharged from the nozzles upon the fire.

The invention described in the first patent to Gray, and covered by the first claim of that patent, consists in employing an independent air-pipe, instead of the distributing-pipes of the Grinnell patent, as the means for holding and releasing the water-valve to exclude and admit the water-supply to the distributing-pipes. This requires a water-valve differently constructed and differently located with reference to the distributing pipes from that shown in the Grinnell patent. After describing an air-compression pump, to be used for supplying the compressed air, the patent describes a valve which consists of two piston-heads connected together, moving in, a cylinder. The water-supply pipe opens in the cylinder below the lower piston-head, and the distributing-pipes open into the cylinder between the two piston-heads. The pressure of water in the supply-pipe against the lower piston-head tends to force the valve upward and open the passage to the distributing-pipes, but so long as the valve is held down by a pressure equal to the water pressure the flow of water to the distributing-pipes is cut off. When the counterbalancing pres-

EDWARD BARR CO., Limited, et al. v. NEW YORK & N. H. AUTOMATIC SPRINKLER
CO.

sure is withdrawn, the pressure of water forces the valve upward, and the passage to the distributing-pipes is opened. The air-pipe leads

from the apartment to be protected, and is sealed there by a metal or material which is fusible, so that should fire occur in the apartment the seal would be broken. It leads into the cylinder above the upper piston-head of the valve. When compressed air is forced into it, a pressure is produced in the cylinder upon the upper piston-head of the valve which more than counterbalances the pressure of the water upon the lower piston-head. So long as this air-pressure is maintained upon the upper piston-head the valve is held down, and the water in the supply-pipe is prevented from flowing into the distributing-pipe. When the seal of the air-pipe is broken by the heat generated by a fire in the apartment, the escape of air from the pipe and from the cylinder reduces the pressure upon the upper piston-head, so as to permit the water to move the valve up and open the passage to the distributing-pipes. The piston-heads, being located between the air-chamber and the water-chamber of the cylinder prevent the water from flowing to the distributing-pipes until the air is released from the air-pipe, and then the water is admitted.

It is apparent that the invention of this patent does not reside in an independent air-pipe as an integral device, but consists in employing that device as the means of holding a valve closed against the water-pressure by the pressure of compressed air until the air is released. A valve so constructed and arranged with reference to air-pressure and water-pressure as to co-operate to this end is an essential element of the invention, and as such must be read into the claim in controversy. The invention described in the second patent to Gray differs from the apparatus of the first patent, and of the patent to Grinnell, in employing a vacuum instead of a compressed air-pressure in the distributing-pipes communicating with the chamber to hold and release the valve. The patent describes devices constituting a positive locking mechanism to hold the valve right in its seat, which mechanism is quite independent of the diaphragm in performing this function. This holding device is applied directly to the valve spindle, and locks the valve against the pressure of the water. In the Grinnell patent the valve is held in its closed position entirely by the pressure of air upon the diaphragm, and is not locked by mechanism independent of the tripping mechanism. Thus, in Gray's apparatus, if the tripping device be entirely removed, the valve is still locked and held in its closed position, while in Grinnell's the valve, diaphragm, and tripping device are so arranged and connected that no part can be removed without liberating the valve. The invention of this patent consists in substituting vacuum pressure for the air-pressure of Grinnell, and in combining with the devices of Grinnell a holding device to keep the water-valve normally closed, independently of the pressure upon the diaphragm. The claim makes this locking device, or one which will perform the same functions, one of the elements of the combination specified, otherwise the term "holding and tripping device for said valve" would have no significance.

EDWARD BARR CO., Limited, et al. v. NEW YORK & N. H. AUTOMATIC SPRINKLER
CO.

The defendant's fire-extinguishing system belongs to the same class as that to which the patents to Gray relate. It contains a supply-pipe, the distributing-pipes, a valve which cuts off the passage of water from

the former to the latter, and an independent pipe leading from the apartment to be protected to a chamber in which the valve is located, and sealed with sensitive solder at a place, in the apartment to be protected, in which the spider will be exposed to the heat generated by the fire. The independent pipe, however, is not used to convey compressed air to the valve chamber, but is used as an exhaust chamber, to suspend a diaphragm by a vacuum until the vacuum is destroyed, when the diaphragm is released and trips the valve; and the valve is held in a closed position, so that the water from the supply-pipe will not enter the distributing-pipes solely by the pressure of water between the two valves. This system differs as much from the system of Gray, in the mode of operation of the devices combined, as Gray's system does from Grinnell's. The independent air-pipe performs no office in holding the valve closed against the water-pressure, but that is accomplished solely by the pressure of the water upon the different parts of the valve. Compressed air is not employed in the air-pipe, because no pressure is necessary to act against the water-pressure in holding the valve closed. No locking or holding device to engage the valve and keep it closed is employed, because this is accomplished wholly and solely by the pressure of the water.

It follows that the defendant does not infringe either of the claims of the patents in controversy. The bill is therefore dismissed.