

v.32F, no.2-11

BARNES v. RUTHENBURG.

Circuit Court, S. D. Ohio.

June 4, 1887.

1. PATENTS FOR INVENTIONS—PATENTABILITY—NEW COMBINATION OF OLD DEVICES—FIRE-EXTINGUISHING APPARATUS.

Letters patent No. 216,821 were granted June 24, 1879, to Charles Barnes for an apparatus for extinguishing fires, and letters patent No. 233,393 were also granted to him October 19, 1880, for an “automatic fire extinguisher.” The patents describe a system of distributing pipes passing through the various rooms of a building at their ceilings, and fitted with a number of downward projecting sprinkling nozzles. A reservoir is placed in the lower story, above the supply pipe, leading to the street, filled with a fire-extinguishing liquid, which will be discharged upon the fire by force of water from the street main. A supply-valve has an actuating lever which is held up to keep the valve closed by a wire passing up to and united in each room by a fusible joint. The sprinkler consists of, a perforated rose-head, with a cap soldered upon its neck with fusible metal, and certain other attachments. In case Of fire the said fusible joints and caps are melted; the water rushes through the supply-valve forcing and following the fire-extinguishing liquid. Until the occasion of fire the pipes are kept free from fluid. The details of combination in the two patents differ in some respects. The proof showed that the constituent parts were old, but that the combinations were new. *Held*, that the devices were patentable inventions.

2. SAME—INFRINGEMENT.

The defendant manufactured and sold a device for extinguishing fires under letters patent No. 818,508, dated May 26, 1885. A reservoir was used in it charged with a fire-extinguishing liquid, which generates a gas, thus producing, pressure, and the distributing, pipes being thus at all times filled with liquid. A pipe connected the reservoir with the street main, cut off by a check-valve kept closed by the pressure from the reservoir. In case of fire, the pressure was relieved by the flow through the distributing pipes and the valve opened, letting in the water. *Held*, that this device was not sufficiently similar to those above mentioned to constitute an infringement.

3. SAME—DOCTRINE OF EQUIVALENTS.

The sprinkler or distributor, manufactured by said defendant under said patent No. 318,508, is, by the doctrine of equivalents, an infringement upon the fourth, fifth, and sixth claims of the above-mentioned patent No. 233,393, but does not infringe the first claim of said patent No. 216,821.

In Equity.

Follett, Hyman & Kelley and *George F. Murray*, for complainants.

James Moore, for respondent.

SAGE J. The complainants sue for infringement of letters patent Ho. 216,821, granted June 24, 1879, to Charles Barnes, for apparatus for extinguishing fires, and letters patent No. 233,393, granted October 19, 1880, for automatic fire, extinguisher, alleging infringement, of the two claims of No. 216,821 and of the third, fourth, fifth, and sixth Claims of No. 233,393. The drawings in No. 216,821 show a system of distributing pipes passing through the various rooms of a building at their ceilings, and fitted with a number of downward projecting sprinkling nozzles. In the lower story, and just above the supply-valve of a pipe leading from the street main up to and connecting with the distribut-

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ing pipes, is a reservoir to be filled with some non-freezing and fire-extinguishing liquid, which will be discharged upon the fire by the force

of water from the street main when used in connection with water-works, or by the weight of water from a reservoir on top of the building in localities where there are no water-works. The supply valve has an actuating lever, which is held up to keep the valve closed by a wire passing up to and united in each room by a fusible joint formed by cutting the wire, and inserting the cut ends into the opposite ends of a metal tube, and, making solder joints between the ends of the tube and the wire with fusible metal. The sprinkler consists of a screw-threaded shank or seat-piece, adapted to be screwed into the union of the distributing pipes, a perforated rose-head, secured to the shank and a valve within the rose-head, adapted to be adjusted and held against its seat by a screw-threaded stem tapped through a cap soldered with fusible metal upon the neck of the rose-head. This cap, it is stated in the specification, has, preferably, up-turned flanges which cap over the neck, to which the cap is secured by fusible solder run upon the top edge of the flange, and around and against the neck. The neck has a space between its shell and the valve stem, and perforations which allow the heated air, in case of fire, to enter and fuse the solder joint, and let the valve drop down and open the passage for the fire-extinguishing liquid and water into the rose-head. At the same time the heat fuses the soldered joint of the wire which holds up the actuating lever, and the water rushes through the supply-valve, forcing and following the fire-extinguishing liquid into the distributing pipes and rose-heads, the caps of which, the solder holding them in place, having been fused, are forced off, and a shower of water thrown upon the fire. There is also an arrangement for ringing an alarm bell, but, as it is not mentioned in the claims, it is not necessary to describe it.

The claims, both of which it is claimed are infringed, are as follows:

(1) A nozzle for automatic fire extinguishers, constructed substantially as before set forth, namely, of a rose-head inclosing a valve controlling the water passage thereto, the stem of the valve projecting through a neck of said rose-head, and being screwed to a cap secured to said neck by fusible metal. (2) The combination, substantially as before set forth, of the water-pipes, the automatic valve, and the fire-extinguishing liquid-containing reservoir, connected with the water-pipes as described, so that its contents will be discharged with and by the flow of the water.

The object of patent No. 233,393, as set forth in the specifications, is fivefold, as follows:

(1) To provide a supply-valve more easily and securely forced and held to its seat, and more readily released therefrom; (2) to relieve the valve-sustaining devices from the strain consequent upon the expansion and contraction of the valve closing and releasing wires under varying temperatures; (3) to relieve the fusible solder joints from strain, so that they may be made more sensitive to heat, without liability to parting, excepting in case of fire; (4) to prevent the possibility of the discharge orifices becoming clogged by sediment, or by

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scales from the pipes; (5) to provide means to hold the valve seat within the distributor securely to its seat, without liability of fracturing the solder joint by which it is held, by expansion and contraction of the metal.

The drawings show the general system of distributing and supply pipes, supply-valve, and reservoir, as in No. 216,821. The case of the supply-valve

is cast in two sections, which are bolted together through outwardly projecting flanges, to receive the journal bearings of a shaft. The valve has a yoke cast with it, upon the under side, through which the shaft passes. An eccentric upon the shaft, and within the yoke, opens the valve when turned in one direction, and closes it when turned in the opposite direction. The valve is guided by rods which pass through transverse bars in the upper and lower parts of the case. The lower rod has a groove to receive a pin from one of the bars to prevent the valve and yoke from rotating, and the shaft, where it enters the valve case, is suitably packed to prevent leakage. Any desired number of flanges or disks may be secured upon the shaft, either separately or upon a common hub. The form of the shaft outside the case illustrated in the drawings is square, to enter corresponding perforations in the flange or disk hubs, but, the specifications state, any other mode of securing them rigidly to the shaft may be adopted. To each of the disks a lever is pivoted, with a weight suspended from outside the periphery of the disks. The free ends of the lever are held up by wires or cords which pass through the different stories of the building, and are united at different points of their length by a coupling device which is a joint of fusible solder. When in position or coupled, the wires or cords, by sustaining the lever, hold the supply-valve closed; and, as the valve opens against the pressure of water from the main, that pressure assists to hold it securely to its seat.

The patentee's intention was to have independent wires or cords from the different stories or divisions of the building, and as many independent levers. Thereby the contraction and expansion of the wires would be distributed between all the levers, and the friction caused by the pulleys or bell cranks required to change the direction of one wire throughout the entire building avoided. Whenever any lever is released by its retaining wire, the weight upon the lever brings it down upon its fulcrum pin, secured in the face of the disk, partially rotating the shaft, and, by the action of the eccentric, opening the valve, and turning a supply of water into the system of pipes. The coupling device consists of a metal lever through the eye of which one of the cut ends of the wire cord is passed and looped. A loop is made upon the end of the adjoining section of the wire. The bar of the lever is passed through this loop, and turned back parallel with the wire, which passes through the eye of the lever. A slide is passed over the end of the lever, and over the cord holding the lever in position parallel with the cord. The other wire, or part of the wire, is held by its loop around the enlarged portion of the lever containing the eye, and extends in the opposite direction. The slide is jointed together with fusible solder, and, as the strain is slight, the solder may be made very sensitive to heat, without liability to part excepting in case of fire. When it does part the lever is released, and flies back, the loop of the other part of the wire instantly slips off the lever, the part of the wire over which the slide passed is released, the lever of the supply-valve drops, the supply-valve is thrown open, the water is turned on, and the fire extinguished.

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These features of the patented improvements are covered by the first, second, and third claims of the patent, which are as follows:

(1) In an automatic valve for fire extinguishers, the combination of case, A, valve, C, and cam-shaft B, with flange, D, weighted lever, E, and a fusibly jointed releasing wire, as G, for the purpose specified. (2) In an automatic fire extinguisher of the character described, the combination of a system of pipes, a supply-valve for said system, with two or more independent valve-actuating devices; each for which is held by an independent wire passing to a different part of the building, either one of which actuating devices will throw the valve open when its holding wire is parted. (3) A valve-releasing device for automatic fire extinguishers, consisting of wires, G, lever, H, and *fusibly jointed slides*, I, combined to operate substantially as set forth.

Of these the third only is involved in this cause.

The next feature of the complainant's improvement relates to a perforated rose-head distributor or sprinkler, into the lower end of which is screwed cap, and between two lugs secured or cast upon the under side of this cap, about the distance of half a radius from its center, a lever is pivoted. The opposite end of the lever has a swinging lug-plate, which, when the distributor is adjusted for use, is secured by a fusible solder joint to a projection extending from the periphery of the cap, as shown the drawings. The preferred form of distributor has at its outer end, instead of the lug-plate, a hooked lever which reaches up and hooks over a projection of the shell of the rose-head, and has its flat edge jointed by fusible solder to the projection upon the shell and a corresponding projection upon the cup. The pivot pin of the lever is in a vertical plane outside the solder joint, so that, when the solder is fused, the lever is thrown from its bearing the lower part of the projection upon the cap serving as a fulcrum for this purpose. The valve of the distributor, which shuts off the flow of water from the distributing pipes, has a stem, in two sections, projecting downward through a central opening in the cap. The lower end of the upper section is bored out for some distance, and a rubber plug inserted. The lower section is turned off to enter the cavity in the upper portion, and rest upon the rubber plug, which serves as a cushion. The valve is tightened and; held to its seat by a screw, which is tapped through the arm of the lever above described. The valve is thus, when the lever is in position, held closed, and, when the solder of the lever joint is fused, the elastic force of the rubber plug in the valve assists to throw the lever down, and, while the lever is in position, the same force prevents the fracture of the joint, and also leakage from the valve in the event of the distributing pipe being filled with water.

The specifications also describe, and the drawings illustrate, the mode of applying the elastic stem of the valve to the form of sprinklers theretofore used. For such use the elastic joint is made at the upper end of the valve-stem, and the lower end is screw-threaded through a plug of fusible metal in the lower end of a guide-cap; which has a projection

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extending up into the shell of the distributor, and a flange or shed extending around it below the shell. The lower part of the shell is perforated

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so that, in case of leakage, the water would be discharged from the distributor upon the inclined top of the flange, and be carried oh without reaching the heck of the cap to impede the fusing of the joint in case of fire.

These features of the complainant's improvements are covered by claims 4, 5, and 6, as follows:

(4) In an automatic fire extinguisher, the combination, substantially as set forth, of a perforated distributor, a valve located within said distributor, and having a stem which projects through the shell of the distributor, and a lever, as K, to hold the valve to its seat within the distributor until its fusible joint, k^3 , is released by heat.

(5) In an automatic fire extinguisher, the combination, substantially as specified, of a perforated distributor provided with a valve, the stem of which projects through the distributor shell, with a jointed lever, K, and latch, K; said latch resting upon a projection on the shell of the distributor, and secured thereto by fusible solder to hold the valve to its seat.

(6) In an automatic fire extinguisher, the combination of a perforated distributor, and a valve to control the supply of water to said distributor, said valve provided with a two-part stem, and an elastic cushion between the parts, to hold the valve to its seat with elastic pressure by fusible solder, substantially, as specified.

There is also a provision against the clogging of the distributor by sediment or scales. This is prevented by a perforated screen within the distributor, which is covered by claim 7 of the patent, but, as that claim is not involved in the litigation, no further reference to it is necessary. The defendant admits the manufacture and sale of the device, which, it is claimed, is an infringement of the complainants' patents. The complainants' system is what is known technically as the "dry-pipe system,"—that is, the distributing pipes are kept free from fluid until the occasion of a fire; but if his reservoir be filled, as he suggests in the specification of his patent of June 24, 1879, "with some non-freezing and fire-extinguishing liquid," the pressure of the gas evolved in the reservoir would fill the distributing pipes with the liquid, and his system would be a "wet-pipe system," in which the pipes are at all times filled with fluid. In practice the complainant has not charged his reservoir as suggested, but has placed in it dry chemicals, with which the water, upon the opening of the supply-valve, comes in contact, and the fire-extinguishing fluid thus provided, passes into the distributing pipes, and is thrown through the sprinklers upon the fire. In many cases even the chemicals are omitted, the sole dependence being upon the supply of water coming through the supply-valve, so that, in practice, the complainant's system is a dry-pipe system.

The defendant's is a wet-pipe system. He has a reservoir charged with a fire-extinguishing fluid, which generates a gas, producing a pressure of about 100 pounds to the square inch. It results that the distributing pipes are at all times filled with fluid. He has

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also a pipe connection with the street main or other source of supply, which is cut off by a check-valve placed without the reservoir, and opening inwardly towards the reservoir. When the pressure from the reservoir is greater

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than that from the main, which is ordinarily about 40 pounds, the check-valve is kept closed; but it opens whenever, as occurs upon the breaking out of a fire in the building, the pressure from without is greater than that from within. The defendant has also distributing pipes like the complainant's, and sprinklers, the openings to which are closed by valves under control of devices whose action is suspended whenever the temperature of the surrounding air becomes sufficient to melt a retaining instrumentality of some fusible metal.

The first defense is anticipation by various devices in public use before the date of complainant's invention. Armitage's patent No. 15,721, of July 8, 1856, shows a vertical supply-pipe, leading from a ground connection with the water supply to the different stories of a building where it connects with jet-pipes secured to the ceiling. A valve located in the supply-pipe is normally closed, preventing the passage of water to the jet-pipes. This valve is provided with a weighted lever, which, falling downward, opens the valve, but the lever is prevented from falling by a combustible cord which sustains it, and extends to and along the ceilings where the jet-pipes are located. The burning of the cord which occurs upon the breaking out of a fire releases the lever, the valve opens, and the water is discharged through the jet-pipes upon the fire. This was a dry-pipe system. The jets were always open.

Newton's patent No. 171,305, December 21, 1873, provided for a valve or stop-cock in each branch or distributing pipe, and operated by the melting of an easily fusing solder, and each sprinkler is provided with a suitable check-valve kept closed, except in case of fire, by a fusible solder. Reservoirs or tanks charged with chemical compounds for extinguishing fires were known before the date of complainant's invention. They are shown in the Manning patent of October 17, 1871; the Maxim patent of July 22, 1873, in which the reservoir connects directly with the jet-pipe system in the building. They are also shown in other forms of apparatus of dates prior to the complainant's invention, for extinguishing fires; but as the complainant makes no claim to the reservoir, but only to the combination of the valve and attachment with a fusibly jointed releasing wire, they need not be considered. The combination claimed is not anticipated.

In automatic fire extinguishers, an essential requisite is prompt action at the incipiency of the fire, when alone they are effective; and it is highly important also to confine the discharge of the extinguishing fluid to the locality of the fire, and thus limit damage by water. In testing the validity of the complainant's patents, we must keep these points in view. The best automatic fire extinguisher prior to complainant's was Parmalee's, known as the Parmalee water-joint automatic distributor. It consisted of a perforated nozzle or distributor, over which an unperforated cap was soldered by a fusible metal. This was a wet-pipe system, and the soldered joint was in contact with the water in the pipes, which retarded the melting of the fusible metal. The complainant Barnes then made his first

invention for which letters patent No. 212,346 were granted him February 18, 1879. The device for sustaining the lever controlling

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the supply-valve differed from that patented June 24, 1879, No. 216,821, which is the first of the two patents on which this suit is brought, in that the fusible connection of the sustaining wire was made by passing the ends of the wire through holes in a connecting piece of fusible metal, and making a loop, or by soldering them with fusible metal, the connection to be made in either case at a point removed from the rose-heads, and where the action of the heat upon the fusible metal would not be retarded. The stem of the valve of the rose-head sprinkler is screw-threaded, and tapped through a cap secured to flanges upon the neck of the rose-head by fusible solder. The neck has a space between its shell and the valve-stem, and perforations which allow the heated air to enter so as to rapidly fuse the solder joint and release the valves. At the same time the heated air fuses a joint of the wire, and the discharge of water upon the fire takes place in less than half the time required to set any previous automatic fire extinguisher in operation. The complainant's improvement was properly recognized as a patentable invention, as were the improvements subsequently patented and in suit. It is true that most if not all of the constituent parts were old, but the combinations claimed are new, and they are precisely the combinations requisite to greatest sensitiveness to heat, and the speediest operation of the apparatus at a time when every moment's delay involves damage and possible danger.

The next inquiry is, does the defendant infringe? And, first, as to the supply-valve in the reservoir or tank of his apparatus. His valve, as has been stated, is an ordinary check-valve, opening inward, or towards the reservoir. It has no lever with wire attached, as has the complainant's. It is acted upon solely by pressure from within or from without. If the excess of pressure be from within, as is the case when his reservoir is charged, and the sprinklers of his distributing pipes are closed, the valve is closed, and remains closed until the pressure is so diminished as to be less than that from without, and then it opens. This does not occur at the beginning of the operation of his apparatus upon the occasion of a fire, before the pressure from the reservoirs by reason of the gas generated exceeds that from without, until the contents of the reservoir are almost exhausted, and the fire may be entirely quenched without the use of any water from the main. This differs widely from the operation of the complainant's valve, which is thrown open mechanically by the falling of the lever upon the parting of the fusible connection of the wire at the location of the fire, and at once admits the water from the main. Let us look at it in another view. Suppose the complainant's reservoir be charged, as in defendant's, with a fire-extinguishing fluid. The pressure fills his distributing pipes with the fluid, and his is then no longer a dry-pipe system. A fire breaks out. His fusible wire connections are severed by the heat; his supply-valve is thereby thrown open; and at the same time the valves of his sprinklers are released, and his apparatus is in full play. What effect will the pressure from his reservoir, acting through the open supply-valve in the direction opposite to that of the fire, have upon the water

in the pipe leading from the main? Until the pressure is reduced below that from the main, it must drive that water back. In other words, the complainant's apparatus, under such conditions, would operate in both directions,—towards the fire and away from the fire. It would be like a gun firing from the muzzle, and kicking from the breech. It is true the complainant might put in a check-valve, which is common property, but that is not suggested in the patents or either of them; and if he did so, then, under the conditions stated, his supply-valve, with its levers and wire attachments, would be unnecessary, and better be discarded. But he cannot operate his apparatus as a dry-pipe system with a check valve only, for there would be no pressure from within. It is clear, then, that there is no infringement by the defendant of the second claim of complainant's patent No. 216,821, nor the third claim of complainant's patent No. 233,393.

This brings us to consider whether the defendant infringes the first claim of complainant's patent No. 216,821, and the fourth, fifth, and sixth claims of complainant's patent No. 233,393. The valve of defendant's sprinkler or distributor is, first, a rubber sphere of about twice the diameter of the nozzle or ajutage of the distributing pipe. This sphere is held firmly against the mouth of the nozzle (as the defendant states in the specifications of his patent No. 318,508, dated May 26, 1885) by the following instrumentalities: That part of the valve or sphere remote from the ajutage occupies a hemispherical cell, which is, in turn, inclosed in a cup-formed guard. It is plain that, so far, we have in effect the lower end of the first section of the valve-stem of complainant's patent No. 233,393, the hemispherical cell, and the inclosing guard, answering, under the doctrine of equivalents, in every essential particular to the section of the complainant's valve with the end bored out. With the rubber sphere in place, we have the first section of complainant's valve-stem complete, but inverted, which is a mere change of position, not in the least affecting the result. But to return to the description. This guard, with its inclosed shell and valve, (or sphere,) is confined in a cage composed of a pan-shaped deflector and the ajutage, and within them the valve, when at liberty, freely slides. A staple-formed projection is stamped out from the under side of the deflector. This receives an arm, projecting radially from the deflector, as shown in the models and in drawings of the patent. Another portion of the deflector, diametrically remote from (to use the phrase of the specification) the point where the staple projection was stamped, a lip-formed projection is stamped, also downward, and projecting perpendicularly from the deflector. Through the opening created by this stamping is introduced the short arm of a lever, bent into a hook form, its arms forming an acute angle. When the longer arm of this lever is drawn up close to the arm above referred to, as projecting radially from the deflector, the two extending the same distance beyond the edge of the deflector, the short arm of this bent lever presses up against and at or near the center of the bottom of the outside of the guard containing

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the hemispherical cup and the valve, and so as to hold the valve close against the mouth of the

ajutage, and to close the same. Here we have the second and remaining section of the stem of complainant's valve, and there is before us an illustration of that ingenuity in evasion which is not invention, and does not avoid infringement. The outer ends of the lever and the radial arm are held together by a tube ring or band of fusible alloy, and here we have almost exactly the device by which the complainant connects his wires controlling his supply-valve, and we have also the equivalent of the complainant's device for retaining in position the valves of his distributors. The equidistant bars which connect the deflector to the ajutage, and within which the guarded valve, when at liberty, freely slides, are provided with screw-threads upon their points of engagement with the top piece, and can be used to adjust the seating of the valve, and prevent leakage. This device is the equivalent of the screw which is tapped through the lever arm of the complainant's distributor in his patent No. 233,393.

The defendant substitutes for the perforated rose-head distributor described in Complainant's patents the circular deflector already referred to. "When the valve is opened, the water, "striking the valve, the edge of the guard, the deflector, and the cage bars, is scattered or projected in a spray in every direction,—upward, downward, and sidewise,—so as to reach every object within the range of its delivery." This description, quoted from the specification of the defendant's patent, accurately describes also what is accomplished by complainant's rose-head distributor, in which the water from the distributing pipe; striking the bottom, is scattered or projected through the perforations in a spray "in every direction, upward, downward and sidewise, so as to reach every object within the range of its delivery." The defendant's device is therefore the equivalent of the complainant's. The deflector was known before the date of complainant's invention. It is shown in the Alderson & Loftus patent No. 225,092, of March 2, 1880.

The conclusion of the court is that the defendant infringes the fourth, fifth, and sixth claims of complainant's patent No. 233,393, of October 19, 1880, but does not infringe the first claim of complainant's patent No. 216,821, of June 24, 1879; and a decree for an injunction and account will be entered accordingly.