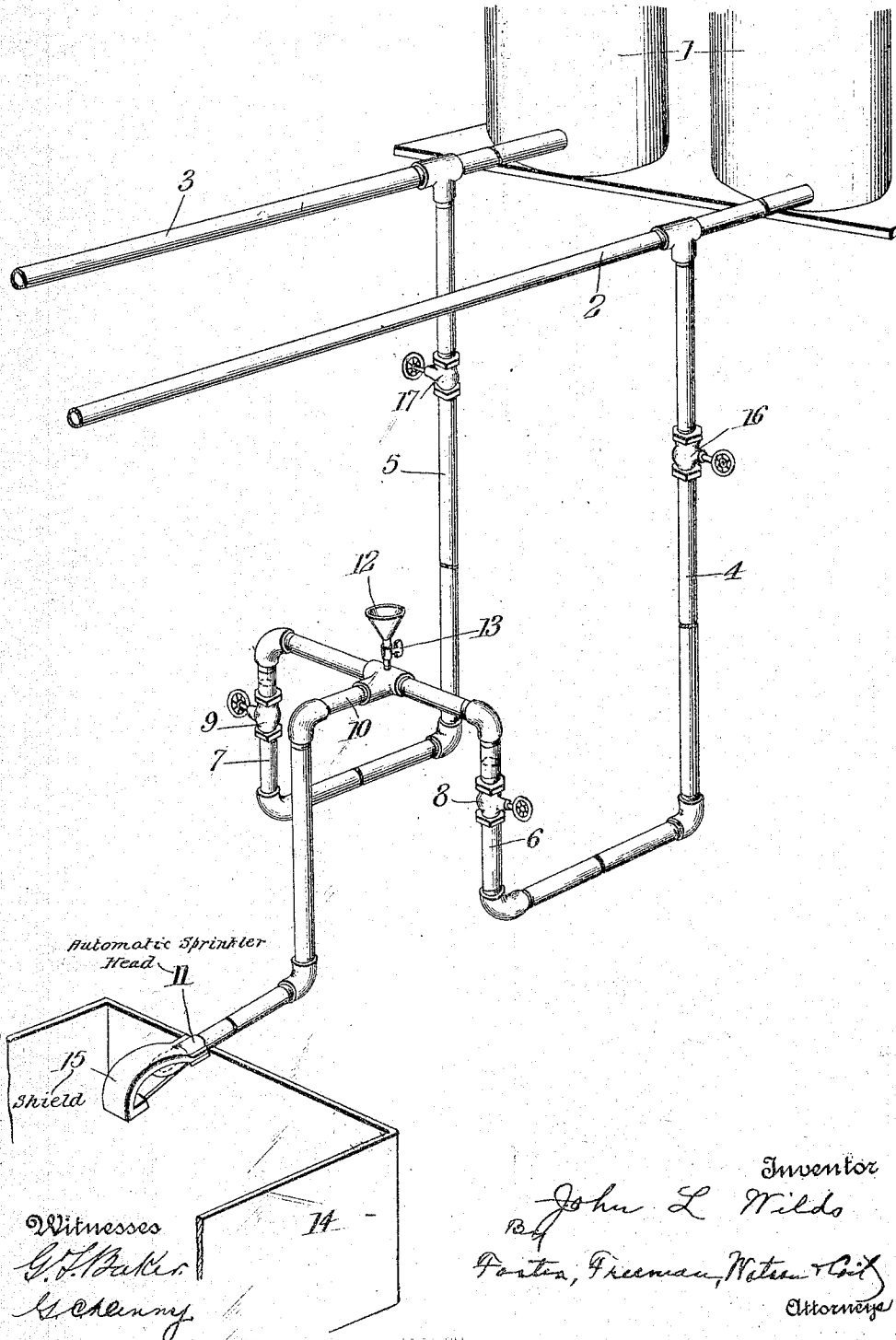


J. L. WILDS.
FIRE EXTINGUISHER.
APPLICATION FILED FEB. 17, 1915.

1,185,154

Patented May 30, 1916.



UNITED STATES PATENT OFFICE.

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FIRE-EXTINGUISHER.

1,185,154.

Specification of Letters Patent.

Patented May 30, 1916.

Application filed February 17, 1915. Serial No. 8,837.

To all whom it may concern:

Be it known that I, JOHN L. WILDS, a citizen of the United States, residing at Chicago, Cook county, State of Illinois, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a specification.

This invention relates to means for automatically extinguishing fires and it is particularly adapted for use on the interior of buildings for putting out fires in open top dip tanks which contain volatile and easily inflammable materials such as light oils and coloring pigments.

The invention contemplates the use of two liquids which, when they are mixed or come together, form a gas or foam which will spread over the fire and extinguish it. Such liquids are of course well known in the art and in themselves do not form a part of my invention.

The invention relates to the efficient means which I have devised for maintaining the two liquids separate until they are to be discharged in extinguishing the fire and to then automatically and properly mix the two liquids and discharge them over the fire.

The novel features of the invention will be apparent from the following description taken in connection with the drawings.

In the drawings I have shown a perspective view of an apparatus embodying the invention.

As shown in these drawings, I make use of separate tanks 1 placed in any suitable position above the point where it is desired that the fire extinguishing operation take place so as to furnish a head which will place the liquids led to the point of discharge under pressure. The separate pipes 2 and 3 lead from the two separate tanks and convey separately the two liquids which, when mixed, form the extinguishing compound and it will be understood that in a building of any size these pipes 2 and 3 may have branches 4 and 5 connected thereto at various points to supply separately different points where it may be desired to extinguish fires.

The solutions used for producing the fire extinguishing fluid form no part of the present invention but the following is an example of solutions which may produce a suitable fire extinguishing fluid. The tank connected to the pipe 2 may contain a solution

consisting approximately of one ounce of commercial salicylic acid, 25 pounds commercial sodium bicarbonate, 2 pounds boiled flake glue and 45 gallons of water. The solution in the tank connected to the pipe 3 may consist approximately of 31½ pounds commercial alum, 10 ounces sulfuric acid and 45 gallons of water. A number of suitable fire extinguishing solutions are known and therefore I do not wish to be restricted to any special solutions but give the above merely as an example.

In the use of two liquids which are to be mixed to form the extinguishing gas or fluid, it is essential to the best results that the supply of the two liquids commence at exactly the same time so that they will be mixed together and discharged in the form of the foam or gas to extinguish the fire and I have found that it is not possible to get the proper operation by making use of two separate automatic discharge valves operated by heat to release the two liquids. Where two such valves are used, one is likely to operate before the other and the discharge of that liquid, not in the form of the gas, will or may interfere with the operation of the other automatic valve. According to my invention therefore the two liquids are mixed in a single pipe and escape from a single discharge head or automatic valve, as mentioned above, the single sprinkler head acting automatically to permit the discharge.

In order to keep the liquids separate normally when there is no fire and at the same time to cause both to be mixed and discharged together as soon as the automatic valve in the discharge opens I provide a connection between the two separate pipes 4 and 5 to the discharge so constructed that a liquid seal can be formed therein to maintain the fire extinguishing liquids separate in their separate pipes. I do this by forming a bend or goose neck in the pipes 4 and 5 in the vicinity of the tank where the extinguishing operation is to take place and I place within the discharge head and in the upwardly extending portion of this bend a neutral liquid which is of less specific gravity than either of the liquids in pipes 4 and 5 and which will not produce any chemical reaction with those liquids. I may use for this purpose glycerin or suitable light oil.

It will be observed as shown in the draw-

ing that the pipes 4 and 5 have the upwardly extending portions 6 and 7 in which I place valves 8 and 9 and above these valves the two pipes join and connect with the pipe 10 leading to the sprinkler discharge head 11. A filling cup 12 provided with a valve 13 may be placed at the upper part of the upward bends of the pipe and through it the light oil may be supplied to the pipe 10 all the way to the discharge head 11 and also in the pipes 6 and 7 down to the valves 8 and 9. It will be understood that the valves 8 and 9 are closed before the light oil is supplied through the cup 12 and after these parts are full of the light oil the valve 13 is closed and the valves 8 and 9 are opened. The liquids in the pipes 4 and 5 being heavier than the light oil will remain separate and will simply press against the lower end of the column of oil in the two pipes. In other words, the two fire extinguishing liquids cannot reach the pipe 10 or come in contact with each other until the light oil is discharged. If, however, the sprinkler head 11 is operated by the opening of the heat controlled valve therein the light oil will flow out of the sprinkler head into the tank 14 where the fire is and the liquids in the pipes 6 and 7 will gradually rise until they mix in the pipe 10 and they will then proceed from that point to the discharge and the resulting gas or foam will then be discharged into the tank 14 over the fire and will extinguish it.

I may make use of any preferred form of discharge head for the extinguishing gas but I prefer to place over the head a shield 15 which serves to catch the heat from the fire in the tank 14 and to thus operate the automatic valve more certainly and more quickly. This shield furthermore spreads and directs the extinguishing gas over the surface of the material in the tank. In my system I preferably place valves 16 and 17 in the two pipes 4 and 5 at some distance from the bend or goose neck and from the discharge so that the supply of the two liquids may be shut off after the fire is extinguished without approaching the tank, where the fire occurred, too closely. These valves are of course normally open when the system is ready for its automatic operation. It will be noted that no checks or other obstructions are placed in the pipes leading from the tanks to supply the said liquid.

My invention is not limited to the use of a neutral liquid as a seal which is of less specific gravity than the fire extinguishing liquids since a neutral liquid having a greater specific gravity may be used for the purpose. When such heavier liquid is used it will be understood that it will fill the pipe 10 down to the sprinkler discharge head and will also fill the adjacent parts of the branch supply pipes extending to that part of those

pipes where the supply of liquid moves downward in traveling to the point of discharge.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent:

1. In a device of the class described, the combination with two pipes adapted to separately convey two liquids under pressure capable when mixed of forming a fire extinguishing gas, of a discharge pipe with which said two conveying pipes communicate and in which said liquids come together the said two conveying pipes having upwardly extending portions near said discharge pipe, means for introducing into said discharge pipe and upwardly extending portions a neutral liquid of less specific gravity than those in said pipes whereby said liquid will be trapped to prevent said two liquids from entering the discharge pipe and mixing until the discharge is opened.

2. In a device of the class described, the combination with two pipes adapted to separately convey two liquids under pressure capable when mixed of forming a fire extinguishing gas, of a discharge pipe with which said two conveying pipes communicate and in which said liquids come together the said two conveying pipes having upwardly extending portions near said discharge pipe in which a neutral liquid of less specific gravity than those in said pipes is adapted to be trapped to prevent said liquids from entering the discharge pipe and mixing until the discharge is opened, valves for said upwardly extending portions, and means for supplying the lighter liquid to the portions above said valves.

3. In a device of the class described, the combination with an open top tank adapted to contain easily inflammable liquid material, of two pipes for separately conveying to the vicinity of said tank two liquids under pressure capable when mixed of forming a fire extinguishing gas, a discharge head with which said pipes communicate directed over the contents of said tank and provided with an automatic heat operated outlet valve, an upwardly extending goose neck bend in each of said pipes near said discharge head, means at the upper part of said bend for filling said discharge head, and upwardly extending portions with a neutral liquid of less specific gravity than said two fire extinguishing liquids, and hand operated cut off valves in said two pipes for shutting off the supply after the fire is extinguished.

4. An apparatus for automatically extinguishing fires in open top tanks containing volatile and easily inflammable oils and similar materials in buildings comprising in combination a tank, a pair of pipes for separately conveying to the vicinity of said

tank two liquids under pressure capable when mixed of forming a fire extinguishing gas, said pipes having upwardly extending portions near said tank, a discharge member with which said pipes communicate beyond said upwardly extending portion and adapted to direct the escaping material over the contents of the tank, an automatic heat operated release valve for said discharge member, and means for introducing a neutral liquid of lighter specific gravity than said first mentioned liquids into said discharge member and the upwardly extending portions of said pipes to form a seal preventing the mixing of said liquids.

5. In a device of the class described, the combination with two pipes adapted to separately convey two liquids under pressure

capable when mixed of forming a fire extinguishing gas, of a discharge pipe with which said two conveying pipes communicate and in which said liquids come together the said two conveying pipes being provided with valves and having upwardly extending portions near said discharge pipe in which a neutral liquid of different specific gravity is adapted to be trapped to prevent said liquids from entering the discharge pipe and mixing until the discharge is opened and means for introducing said neutral liquid.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN L. WILDS.

Witnesses:

J. EARL STEWART,
J. LE DALIN.