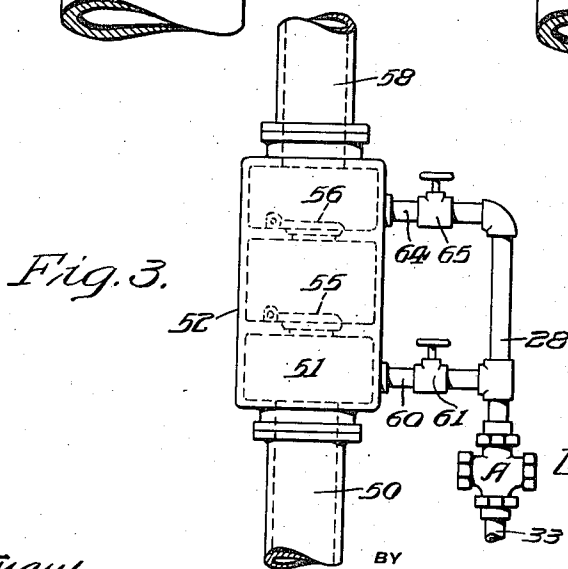
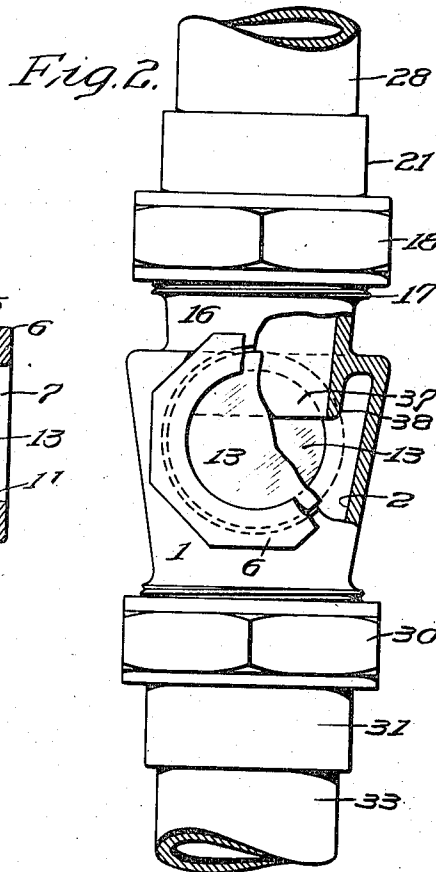
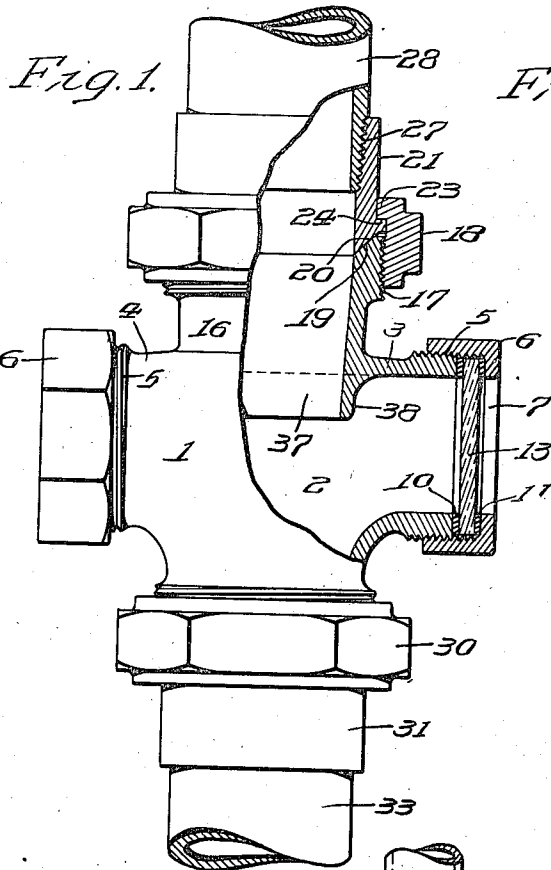


1,179,441.

Patented Apr. 18, 1916.



WITNESS

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SIGHT-DRAIN.

1,179,441.

Specification of Letters Patent.

Patented Apr. 18, 1916.

Application filed December 24, 1915. Serial No. 68,531.

To all whom it may concern:

Be it known that I, LEROY M. LEWIS, a citizen of the United States, and a resident of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Sight-Drains, of which the following is a specification, reference being had to the accompanying drawing.

My invention is particularly adapted for use in connection with automatic sprinkler systems employed for fire protection purposes and the like, although it may be otherwise utilized when desired, and is intended to be installed in connection with such systems to afford a convenient means of ascertaining the condition of the system both as regards the flow of liquid therethrough when the system is in actual operation or under conditions simulating operation, as during a test, and also as regards any leakage which may take place during the normal or non-operative condition of the system.

A principal object of my invention, therefore, is to provide a sight drain adapted for installation in a sprinkler system or the like, and which when so installed shall afford a convenient means of ascertaining the internal condition of the system as regards any objectionable leakage occurring therein; to provide a sight drain of this character in which the glasses or other transparent portions thereof will always remain clear and unclouded; which shall be simple in construction and not liable to become damaged or inoperative through rough usage; which shall be adapted to withstand heavy internal pressures; which may be manufactured at a relatively low cost, and which may be readily installed both in sprinkler systems already in use, as well as in new systems while being constructed.

My invention further includes all of the other various novel objects and features of construction and arrangement hereinafter more definitely specified and described.

In the accompanying drawing, Figure 1 is a side elevation partially in central vertical section of a preferred embodiment of my invention; Fig. 2 is an end elevation thereof also partially in central vertical section, and Fig. 3 is a diagrammatic view showing a preferred manner of installing the invention in connection with certain portions of a sprinkler system.

The form of the invention illustrated com-

prises a cored, preferably cast metal, slightly downwardly tapered body 1, having an interior chamber 2, the body being provided with integral diametrically opposed laterally extended preferably substantially cylindrical portions 3 and 4. These laterally extended portions are provided adjacent their outer ends with external threads 5 adapted for the reception of the correspondingly internally threaded caps 6, each of which is formed with a central preferably circular sight aperture 7. The outer end of each laterally extended portion is faced off normal to the axis thereof to provide a smooth seat for the packing ring 10, between which and a corresponding packing ring 11 is positioned a transparent sight glass or bull's eye 13 formed of any suitable transparent material and secured in place by the cap 6 which is screwed down over the threads 5, thereby forming a tight joint adjacent the bull's eye to prevent the escape of fluid from the interior of the body.

The upper part of the body 1 preferably above the laterally extending portions 3 and 4 is constricted to form an upwardly extending neck 16, which, adjacent its upper extremity, is externally enlarged in diameter and provided with exterior threads 17 for the reception of the correspondingly interiorly threaded union gland 18, the interior of the neck adjacent its upper extremity being beveled and preferably ground, as at 19, for the reception of the correspondingly beveled and ground end 20 of the union or coupling 21, an inwardly projecting flange 23 on the gland serving by engagement with an outwardly projecting flange 24 on the coupling 21 to maintain the ground surfaces in engagement when the gland is screwed down on the threads 17 to form a tight joint between the parts in the well-known manner. The interior of the coupling may be provided with suitable threads 27 for the attachment of a pipe 28, by means of which fluid is conducted to the interior of the sight drain. The lower end of the body 1 is also externally threaded for the reception of a gland 30, by means of which a coupling 31 may be secured to the body in a manner similar to that hereinbefore described in connection with the coupling 21, the lower end of the coupling 31 being internally threaded to receive the end of a drain pipe 33, through which any liquid passing through the body may be carried.

off to some convenient point. It will be understood, however, that while I have illustrated and described unions or couplings of well-known form, and by means of which the pipes 28 and 33 may be respectively connected to the sight drain, any other suitable means adapted for this purpose may be employed if desired.

The interior of the neck 16, which adjacent its upper extremity may preferably be of an internal diameter substantially equal to that of the coupling 21, may, in the preferred embodiment of the invention, be gradually constricted toward its lower extremity so that its interior diameter adjacent thereto will be slightly less than adjacent the coupling, thereby presenting a substantially funnel-shaped orifice 37 leading into the chamber 2. Instead, however, of forming the mouth of the orifice adjacent the lower end of the neck 16 and the upper part of the chamber 2, the metal of which the body 1 is composed is carried downwardly adjacent the lower end of the neck and within the body to form a continuation of the neck, thus providing a downwardly depending circular ring or skirt 38, the lower extremity of which forms the mouth of the orifice 37 and terminates at a relatively considerable distance within the chamber 2, and preferably below the tops of the sight apertures 7, so that a considerable portion of the skirt will be within the line of vision through the bull's eye 13.

The mouth of the orifice 37 is arranged in vertical axial alinement with the opening in the bottom of the chamber, but while the internal diameter of the opening adjacent the lower end thereof is preferably substantially equal to that of the upper extremity of the neck adjacent the coupling 21, the walls of the opening are flared upwardly and outwardly in all directions, as best shown in Fig. 1, so that the upper end of the opening adjacent the orifice 37 is substantially greater diameter than the latter. Hence, any liquid flowing from the latter will be readily collected within the opening and directed into the coupling 31 and thence to the drain pipe 33.

In Fig. 3 is diagrammatically illustrated a method of installing the sight drain in connection with a fragmentary portion of a sprinkler system of the form known as a "dry" system, and which comprises a main feed pipe 50 through which liquid is conducted to the lower chamber 51 of the dry pipe valve 52 in which suitably controlled valve clappers 55 and 56 serve to prevent the liquid from passing into the discharge pipe 58 with which the sprinkler heads are connected by suitable piping, not shown, until the air pressure in the latter is reduced below a certain predetermined point. Con-

nected with the lower chamber 51 is a branch pipe 60 provided with a valve 61 and communicating with a stand pipe 28 in which the sight drain A may be installed. The upper end of the stand pipe 64 is connected with the upper chamber 56 of the dry pipe valve, one or more valves 65 being preferably suitably interposed in the stand pipe. The various valves shown are all kept closed during the normal or static condition of the system, but it will be evident that at any time by opening the valve 61 a test may be made to determine whether or not the supply pipe 50 and lower chamber 51 of the dry pipe valve contain water and also the approximate pressure or head thereof, since on opening valve 61 the water will flow through pipe 60, through the sight drain A and thence to the drain pipe 33 enabling the operator to readily observe through the sight glasses in the sight drain, both the strength and quantity of the flow. Furthermore, during the normal or static condition of the system, a certain amount of "priming" water should always be present in the upper chamber 56 of the dry pipe valve, and whether or not this water is actually present may readily be ascertained by opening the valves 65 and observing whether there is any flow therefrom through the sight drain. A sight drain positioned in the sprinkler system, as shown in the drawing, is also useful when "setting" the system, as during this operation it is first customary to drain all of the water out of the system above the dry pipe valve, and the operator may readily ascertain when this is accomplished by opening the valves 65 and observing whether or not any liquid flows through the sight drain. After assuring himself that the system is dry, the valves 65 may be closed, the "priming" water introduced into the chamber 56 of the dry valve and air under pressure admitted to the discharge pipe 58.

It will be evident, owing to the peculiar construction of the sight drain, that any liquid flowing from the orifice 37 will be directed into the upwardly flaring opening subjacent thereto, and will be completely collected by the same and directed into the discharge pipe 33, thus preventing the liquid from splashing about within the chamber 2 and thereby reaching and clouding the sight glasses 13. Moreover, the peculiar formation of the skirt 38 prevents any creeping back along the surface of the upper portion of the chamber 2 of any fluid issuing from the orifice 37, whereby clouding or befogging of the sight glasses from this cause as well is prevented and an obstructed view into the interior of the sight drain obtained at all times.

While I have diagrammatically illustrated a preferred manner of installing my invention in connection with a sprinkler system,

it will be understood that the method of installation shown is merely arbitrarily selected, and that the invention may be installed in any other suitable or preferred manner in connection with a sprinkler system, or may be employed in various other ways as may be deemed suitable and desirable, and moreover, that while I have herein illustrated and described a preferred embodiment of my invention in considerable detail, I do not thereby intend or desire to limit myself specifically thereto, as it will be evident that various slight changes may be made in the form and details thereof and in the construction and shape of various parts, without departing from the spirit and scope of the invention as defined in the appended claims.

Having thus described my invention, I claim and desire to protect by Letters Patent of the United States:

1. A sight drain comprising a body having a chamber, an orifice leading into said chamber and an opening leading from said chamber, and a skirt depending in said chamber and surrounding said orifice, the walls of the opening leading from said chamber being upwardly and outwardly flared beneath said skirt.

2. A sight drain comprising a body having a chamber and laterally extending portions, a sight glass adjacent the outer end of each of said portions, a neck projecting upwardly from the body, a pipe coupling adjacent the upper end of the neck, a skirt depending in said chamber beneath said neck and defining a downwardly tapered orifice, said body having an opening beneath said neck having upwardly and outwardly flared walls, and a pipe coupling adjacent the lower portion of said body.

3. A sight drain having a body comprising a chamber and laterally extended hollow portions, a sight glass adjacent the outer end of each of said portions, a funnel-

shaped orifice leading into said chamber, and means to prevent liquid passing through said orifice from reaching said sight glasses.

4. A sight drain comprising a hollow body, sight glasses diametrically opposed with respect to said body, a neck extending upwardly from said body and having a tapered orifice communicating with the interior of said body, a skirt beneath said neck and defining said orifice, said skirt being disposed within the line of vision through said sight glasses, and an opening beneath said skirt having upwardly and outwardly flared walls adapted to collect liquid issuing from said orifice.

5. A sight drain comprising a hollow body having laterally extended portions, a sight glass adjacent the end of each of said portions, a neck projecting upwardly from said body and having a central outwardly tapered aperture, a pipe coupling adjacent the upper end of the neck, a pipe coupling adjacent the lower end of the body, a skirt depending in said body beneath said neck and between said sight glasses and surrounding said aperture, and an opening beneath said skirt leading to said last-mentioned pipe coupling and having upwardly and outwardly flaring walls.

6. A sight drain for a sprinkler system comprising a body having laterally extended diametrically opposed portions, each carrying a sight glass, pipe couplings adjacent the upper and lower extremities of said body, a skirt within said body and in the line of vision through said sight glasses, said skirt defining a funnel-shaped orifice leading into said body, and means beneath said orifice operative to collect liquid passing there-through to direct said liquid into the lower of said pipe couplings.

In witness whereof, I have hereunto set my hand this 22nd day of December, A. D., 1915.

LEROY M. LEWIS.