

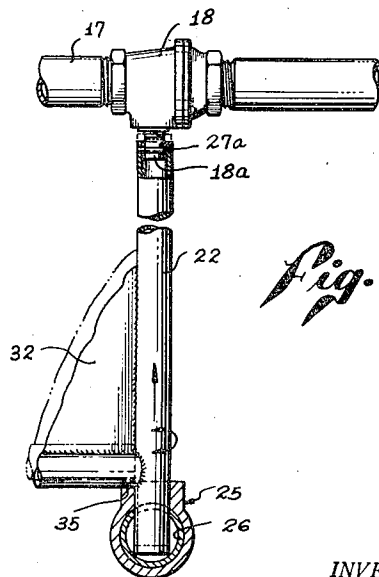
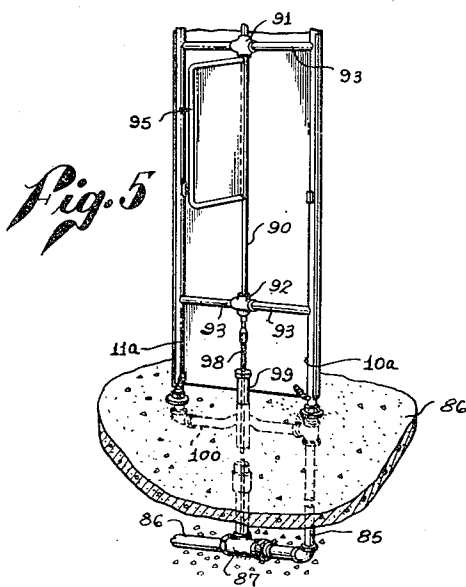
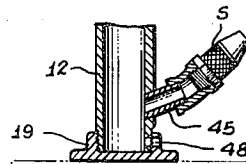
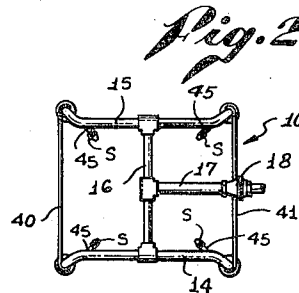
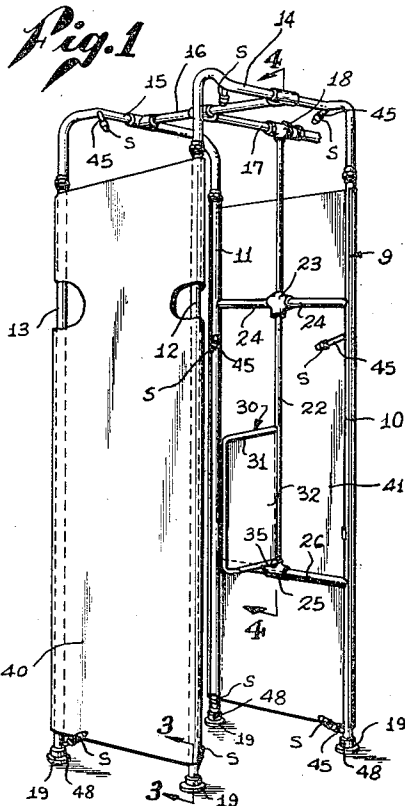
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EMERGENCY SHOWER

2,778,031

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

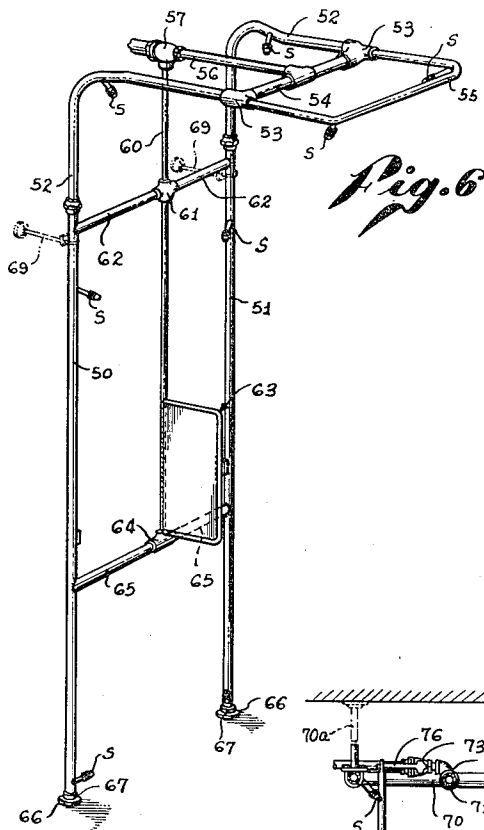


Fig. 6

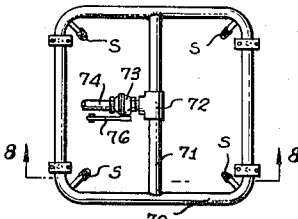


Fig. 7

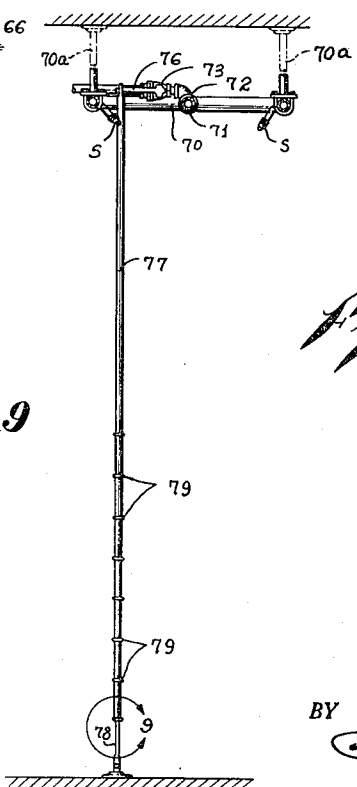


Fig. 8

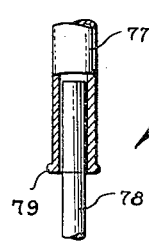


Fig. 9

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2,778,031

EMERGENCY SHOWER

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6 Claims. (Cl. 4—152)

This invention relates generally to emergency showers 15
designed for personnel subject to hazards or contaminants
such as fire, acids, caustics, chemicals, radiological, bac-
teriological, biological, etc.

It is a known fact that many laboratory and industrial 20
workers, students, scientists, engineers and the like, are
often exposed to hazards from industrial accidents such
as explosions and the like, which may and often do set
their clothing afire, spray them with caustic and often
blinding chemicals, radiological substances, or other con-
taminants, and that rescue from loss of life, permanent in-
jury, or disfigurement often depends upon the prompt-
ness with which the fire can be extinguished, or the con-
taminant removed. Spraying with water, if accomplished
with sufficient promptness and thoroughness, often saves
the life of such victims, prevents blindness, or other im-
pairment or disfigurement.

Emergency equipment for such accidents has not in the
past been developed to any great degree of efficiency
and effectiveness. If there is a shower bath available,
it is usually of the conventional shower bath type, and is
not well adapted to the needs of the emergency, either
in proximity, quantity of water delivered, coverage of the
body or ease of control. The victim of such an accident,
unfortunately, is often unable to do much for himself,
and even if he is able to get to a shower room, he is likely
to experience great difficulty in finding and properly oper-
ating the valves.

A general purpose of the invention is accordingly the
provision of emergency shower equipment, designed es-
pecially for use in laboratories, schools, industrial estab-
lishments and the like, where such risks and hazards may
exist, and characterized by capability of delivering a large
quantity of water, complete coverage of the body, and
especially, ease of operation of the control valve by the
victim.

A further object is the provision of an industrial shower
installation utilizing a minimum of material for enclosure
and support over and above the very pipes used for de-
livery of water to the shower heads.

The invention has been embodied in a number of
forms adapted for somewhat differing circumstances, and
certain selected embodiments will now be described in
detail, reference for this purpose being had to the accom-
panying drawings, in which:

Figure 1 is a perspective view of one present preferred
embodiment of the invention;

Figure 2 is a plan view of the embodiment of Figure 1;

Figure 3 is a section on line 3—3 of Figure 1 showing
the lower end portion of one of the vertical pipe stands,
lower shower head, and drain opening and nozzle;

Figure 4 is a fragmentary view of the valve operating
member, being taken in accordance with the section line
4—4 of Figure 1;

Figure 5 is a fragmentary view of a modification of
Figure 1, showing an underground valve installation;

Figure 6 is a perspective view of another illustrative
embodiment of the invention;

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Figure 7 is a plan view of another embodiment of the
invention;

Figure 8 is a section taken on 8—8 of Figure 7; and

Figure 9 is an enlarged detail of a portion of Figure 8,
as indicated by the arrow 9 of Figure 8.

Referring first to the embodiment of Figures 1—4 the
shower 9 comprises four upright pipe stands arranged in
a quadrangle, two spaced rearward stands 10 and 11, and
two spaced forward stands 12 and 13. Typically, the
spacing between the members of each such pair may be
about 28", and the spacing distance from the rear pair
to the forward pair may be about 32". To the tops of
the stands 10 and 12 are coupled the downwardly bent
legs of a generally horizontally disposed connecting pipe
14, and to the tops of the stands 11 and 13 are coupled
the downwardly bent legs of a generally horizontally dis-
posed connecting pipe 15. The two pipes 14 and 15 are
interconnected at about the middle by a larger diameter
transverse pipe 16, and a horizontal water supply pipe 17,
parallel to and half way between pipes 14 and 15, is
connected to pipe 16, and extends across and beyond the
plane of legs 10 and 11, half way between the latter.
Coupled into this pipe 17, in the plane of legs 10 and 11,
is a control valve 18, having a downwardly extending
vertically slotted valve stem 18a operatively connected to
a vertical rotatably mounted valve operating pipe 22 by
means of a cross pin 27a received in the slot in the valve
stem. Valve 18 is a quick opening valve, requiring but
a quarter turn of its stem to be opened from shut off to
fully open position. It will be seen that the valve con-
trolled supply pipe 17 supplies water via transverse pipe
16 to pipe members 14 and 15, from which the vertical
pipes 10 to 13 are supplied. The lower ends of the latter
are closed by means of floor flanges 19 on their lower
ends. Shower heads are fitted onto the pipe members 10
to 16, as later described in more particular.

The valve operating pipe 22 is freely journaled in a
bearing afforded by a cross 23 supported by arms 24
welded at the ends to pipes 10 and 11, and is furnished at
its lower end with a step bearing afforded by a T-fitting
25 supported by pipe 26 welded at the ends to pipes 10
and 11.

At about elbow height, between the bearings 23 and
25, the valve operating pipe 21 is provided with a large
manual operating means 30 by which it can be very
easily and conveniently rotated through the necessary
quarter turn to fully open the control valve, notwithstand-
ing possible severe incapacity of the victim of an indus-
trial accident. As here shown, the operating means 30
is a large flag or vane-like member, framed by a C-shaped
pipe 31, and preferably including a solid panel 32, the
ends of the pipe 31 being welded to pipe 22. This gate-
like member 30 is preferably arranged to extend verti-
cally from a few inches below the waist of the occupant
at the bottom to about chest height at the top. It may
typically be about a foot in width. In the valve-closed
position, the valve operating gate stands straight out into
the shower stall. One entering the stall from either side
can hardly avoid striking this gate. It may be operated
by the hand, or operated, for example, simply by being
struck by the chest of a nearly totally incapacitated per-
son, perhaps blinded, who succeeds however in stumbling
into the shower stall, or is helped thereinto. Thus there
is provided a means for instant full opening of the
control valve under any circumstances, assuring an in-
stant full flow of water. It will of course be appreciated
that in an accident of the kind contemplated, literally
every second counts, and a positive safeguard against a
fumbling effort to open the valve is of utmost importance.

The vertical collar of the T-fitting 25 has a V-notch
35 into which the lower side of the C-shaped pipe 31 of
valve operator 30 engages, when in valve-closed position

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(Figure 1). When the operator 30 is swung to one side to open the valve, the pipe 33 easily rides out of this notch, the operator 30 and rod 22 elevating slightly, as is permitted by the pin and slot type coupling between the rod 22 and the valve stem. This provision keeps the valve operator 30 normally in the centered closed valve position, but permits easy operation of the device to open the valve.

Preferably, sheet metal panels 40 and 41 are mounted between the pairs of pipe stands 10, 11 and 12, 13 respectively, leaving side openings to the shower stall, with the valve operator 30 extending straight out into the stall in the closed position.

A plurality of shower heads *s* are mounted on nipples 45 connected into the pipe structure as thus described, and while the arrangement may vary somewhat, I have found that the arrangement shown affords an optimum of rapid and complete coverage. As shown, there are two of the heads *s* mounted on each of parallel overhead pipe members 15 and 16, directed downwardly and inwardly towards the occupant of the shower. These downwardly directed overhead shower heads are thus arranged in a quadrangle, with an inward inclination, as shown, and in combination, thoroughly cover the head, neck, shoulders, chest and back of the user. The best arrangement which I have discovered, using shower heads which deliver a conical 45° spray, positions each head at inward angles of 22½° from the two vertical side planes defining the adjacent corners of the shower "stall." The outer portions of the 45° angle spray furnished by each head then fall straight downwardly, while the inner sides are at 45° to vertical, assuring full coverage of the person, and minimized wastage of water. I have further found that optimum coverage and effectiveness results when the orifices of the four overhead shower heads are positioned in a quadrangle having sides of 20¼".

A pair of additional shower heads are mounted on pipes 10 and 11 at eye level, as shown, and are aimed directly at the eyes of the user.

Near the lower ends of the four pipes 10, 11, 12 and 13 are shower heads *s* directed upwardly and inwardly, at angles similar to those of the overhead heads, so as to cover the lower and under areas of the user, and to deliver water upwardly underneath a smock, coat or other garment which the occupant may be wearing.

In addition, combination nozzle and drain holes 48 are drilled through the collars of floor flanges 19 and through the pipe stands, and these are directed inwardly, towards the center of the shower, and horizontally, so as to cover the feet of the occupant from all sides.

The shower heads are preferably of a type which will deliver a 45° conical spray of finely broken up water at good flow rate, and such heads are commercially available and need not be detailed herein.

The installation as shown and described has proved to be highly effective. On test, it has been found to completely remove a contaminant from the body of the user within fifteen seconds.

The embodiment of Figure 6 shows a simplified and less expensive version, which however has the major part of the effectiveness of that first described. In this instance, there are but two of the vertical pipe stands, indicated here by numerals 50 and 51. To the top ends of these are coupled the lower legs of L-shaped pipes 52, the upper legs of which are parallel, as shown, and to the ends of these upper legs are coupled, by means of T's 53, a transverse pipe 54, and a U-shaped pipe 55. Coupled into the center of pipe 54 is water supply pipe 56 having control valve 57, of the same type used in the previously described embodiment. To the stem of valve 57 is coupled a tubular valve operating rod 60, which is freely journaled in a bearing afforded by cross 61 supported by arms 62 welded at the ends to pipes 50 and 51, and is furnished at its lower end with a bearing afforded by T-fitting 64 supported by arms 65

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welded at the ends to pipes 50 and 51, the supporting provisions for the valve operating rod being understood to be the same as provided for the first described form of the invention. The rod is furnished with an operator 63 of the same type as employed in the embodiment of Figures 1-4.

The bottom ends of pipes 50 and 51 are fitted with floor flanges 66, whose collars will be understood to be furnished with drain and nozzle apertures, indicated at 67, and of the same type described in connection with the first explained embodiment.

The two vertical pipes 50 and 51 may be laterally supported by any suitable or conventional provisions, such as from a suitable wall adjacent the shower installation, and a conventional type of support is generally indicated by the numeral 69.

Shower heads *s* are employed as in the first embodiment, and it will be noted that the embodiment here described has all of the shower heads of the first embodiment, with the exception of two of the lower heads to the rear of the user. Thus, the present embodiment has four shower heads *s* connected into pipe members 52 and 55 and arranged in a quadrangle, also the two heads *s* connected into pipe members 50 and 51 at eye level, and it also has the two upwardly directed shower heads connected into pipes 50 and 51 near the lower ends of the latter. The shower in this form is capable of washing away contamination completely in a relatively short time, e. g., 28 seconds, since the four upper heads give very complete coverage of the body, and the two lower upwardly directed heads are extremely effective, and if the user will turn within the shower, the washing action is of good effectiveness over the entire body.

Figures 7-9 show a still further simplified installation, providing only the overhead shower heads, but having again a quickly and easily operable valve device. In this instance, a pipe 70 of generally rectangular form is mounted in an overhead position, and while the mounting arrangements are subject to wide variation, and form no part of the invention, overhead ceiling type supports 70a are here indicated. The rectangular pipe 70 has a transverse pipe 71, into which is coupled a T 72 connected to control valve 73, receiving water from supply pipe 74. The pipe 70 is furnished with four downwardly and inwardly inclined shower heads *s*, giving the complete and full overhead coverage characteristic of the other forms of the invention.

The form of valve operating device illustrated for this embodiment includes a long operating lever arm 76 for the horizontally disposed stem of the valve, a vertically disposed tubular operating rod 77 coupled to the free end of lever 76, and a guide rod 78 received within tubular rod 77 in telescopic relation, the rod 78 being fixedly mounted at its lower end, for example, to the floor. The valve 73 being again a quick opening type, opening within 90° of rotation of its shaft, a simple downward pull on the operating rod 77 fully opens the water supply to the four shower heads. To give the user a good grip on the rod 77, the rod may be furnished with rings 79, as indicated in Figure 8.

The last described form of the invention is suitable in situations where hazards are less severe than in many cases wherein the first described embodiments are more suitable. It however has the advantage of very complete overhead coverage, together with a quick opening valve and an easily manipulated valve operator, easily handled notwithstanding partial incapacitation of the user.

Figure 5 is a fragmentary view showing how the control valve of either of the first two described embodiments of the invention may, particularly for outdoor use in cold climates, be placed in a frost-proof underground situation. Numerals 10a and 11a designate generally upright pipe stands, corresponding, for example, to the pipe stands 10 and 11 of Figure 1. In this instance, water is

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supplied to the pipe stand by means of a pipe 85 coupled to the lower end of pipe stand 10a, and extending downwardly into the ground through concrete flooring 86. This pipe 85 connects to horizontal pipe line 86, containing control valve 87 aligned with vertical valve operating rod 90. The rod 90 resembles the valve operating rod 22 of the first described embodiment, in general position and make-up, but instead of extending upwardly to an overhead control valve, it extends downwardly to an underground position, and is coupled at its lower end to the vertical valve stem of control valve 87. The tubular rod 90 is shown as journaled in bearings 91 and 92 supported by pipe members such as 93 extending between and welded at the ends to the vertical pipes 10a and 11a. The valve operating member 95 is mounted on rod 90 and resembles the operating member 30 of the first described embodiment.

In the specific arrangement here illustrated, the rod 90 consists of a tubular member journaled in the bearings 91 and 92, and a downward extension 98 of reduced diameter, surrounded through floor 86 and to the valve by a tubular jacket 99. To assure immediate supply of water to the pipe stand 11a as well as to 10a, a lateral extension 100 of pipe 85 is coupled to the lower end of stand 11a.

The drawings and description show certain present illustrative embodiments of the invention, but it will be understood that these are for illustrative purposes only, and that various changes in design, structure and arrangement may be made without departing from the scope of the broad invention as defined by the appended claims.

I claim:

1. In an emergency shower, a pipe system, a plurality of shower heads supported and interconnected by said pipe system, said shower heads being positioned about an area employed by a user and being inwardly directed to spray water at all sides of the user, a water supply pipe connected to said system, a quick opening valve disposed in said supply pipe, an elongated vertical vane extending, in normal position, into said area to be engaged by the body of said user when entering said area, means mounting said vane for horizontal pivotal movement about a vertical axis at one edge of the vane, and means operatively connecting the vane and valve for opening of the latter upon swinging of the vane from said normal position.

2. In an emergency shower, a pipe system to be supported on a surface, a plurality of shower heads supported and interconnected by said pipe system, said shower heads being positioned about an area to be employed by a user and being inwardly directed to spray water at all sides of the user, a water supply pipe connected to

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said system, a quick opening valve in said supply pipe, a vertical rod mounted on said pipe system for rotation about its longitudinal axis and operatively connected to said valve for operating the latter by turning of the rod, and an elongated, vertical vane fixed along one edge to said rod and extending a substantial distance into said area when the valve is closed, said vane being at a height above the surface to be engaged by the body of said user when entering said area.

3. The subject matter of claim 2 and means for normally retaining the valve in its closed condition with the vane extending into said area.

4. In an emergency shower, an overhead pipe system, a plurality of shower heads supported and interconnected by said pipe system, said shower heads being positioned about an area to be employed by a user and being downwardly and inwardly directed to spray water at all sides of the user, a water supply pipe, a quick opening valve in said supply pipe, four vertical pipe stands arranged in a quadrangle and joined to said overhead pipe system for supporting the latter from a floor, a panel extending between one pair of said stands, a vertical rod supported from the opposite pair of pipe stands for rotation about its longitudinal axis and operatively connected to said valve for opening the latter by turning of the rod in either direction from a normal position wherein the valve is closed, the corresponding pipe stands in said pairs of pipe stands defining therebetween entrance ways into said area, and an elongated, vertical vane fixed along one edge to said rod at such distance from the lower ends of said stands as to be engaged by the body of said user when entering said area through either of said entrance ways, said vane extending a substantial distance into said area and being substantially normal to said panel when the rod is in its normal position.

5. The subject matter of claim 4 and means for normally retaining the rod in its normal position.

6. The subject matter of claim 4, and additional inwardly directed shower heads supported by and interconnected with said pipe system by said pipe stand.

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