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H. H. LOGAN ETAL
RETRACTABLE EMERGENCY WASH FOUNTAIN WITH
CAM-ACTUATED SHUT-OFF VALVE
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3,106,722

Fig. 1

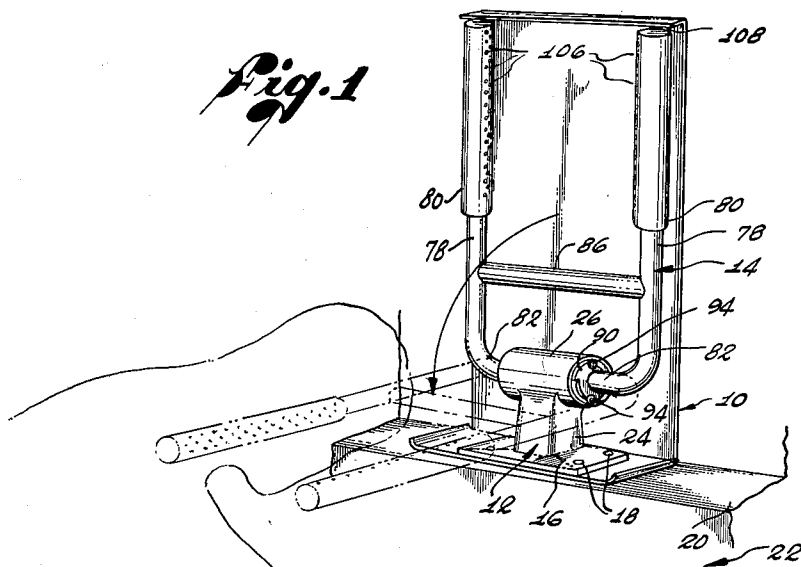


Fig. 2

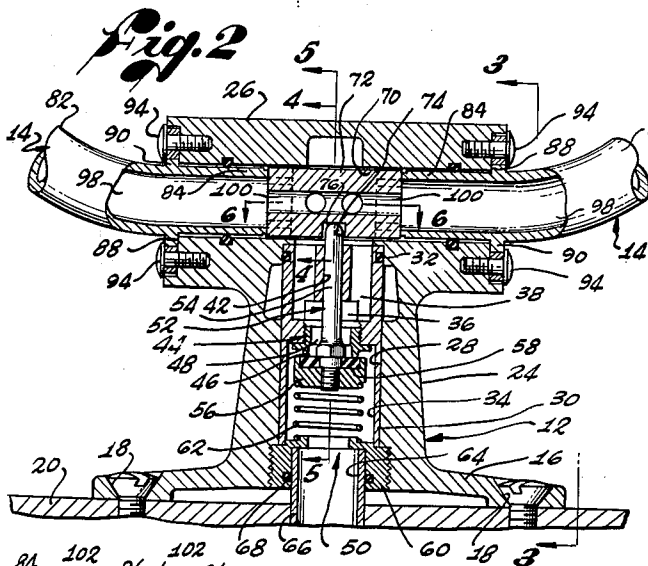


Fig. 3

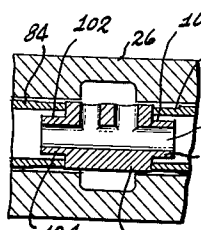
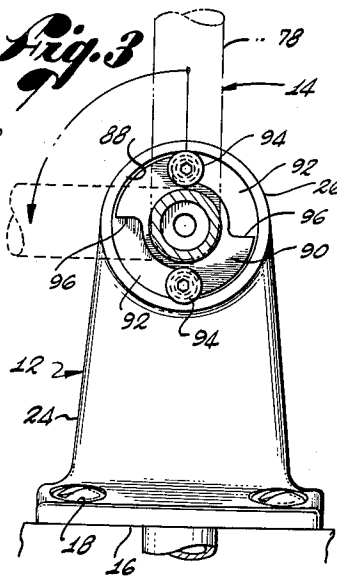


Fig. 6

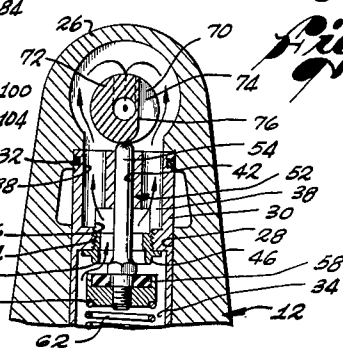


Fig. 5

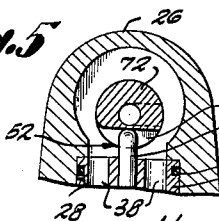


Fig. 4

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3,106,722

RETRACTABLE EMERGENCY WASH FOUNTAIN WITH CAM-ACTUATED SHUT-OFF VALVE

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4 Claims. (Cl. 4-145)

This invention relates generally to emergency body washing facilities of the type commonly used in industrial establishments and the like for washing caustic substances, radioactive matter, bacteriological matter, dust and/or other contaminating materials from persons accidentally exposed to and contaminated by such materials. The invention relates more particularly to a retractable emergency wash fountain.

Briefly, the present wash fountain is equipped with a supporting base, a spray head rotatably mounted on the base for swinging between a retracted storage position and an extended washing position. Within the base is a valve which is operated by swinging of the spray head so that the valve is opened to admit water under pressure to the spray head when the latter is swung from its retracted position to its washing position and which is closed when the spray head is swung from its washing position to its retracted position. The invention is concerned primarily with this valve and its mode of operation. In the illustrative embodiment of the invention, the water discharge openings in the spray head are arranged to direct streams of water over the face and forehead of the person using the fountain to wash contaminated substances from these areas of the person and especially from the eyes.

With this preliminary discussion in mind, a general object of the invention may be stated as being to provide an improved retractable emergency wash fountain characterized by its simplicity of construction, economy of manufacture, pleasing appearance, immunity to malfunctioning, and its suitability to mass produce techniques.

A more specific object of the invention is to provide a retractable emergency wash fountain of the character described embodying a new and unique valve mechanism for controlling the supply of water under pressure to the spray head of the fountain in response to swinging of the spray head between its retracted and washing positions.

Other objects, advantages, and features of the invention will become apparent as the description proceeds.

Briefly, the objects of the invention are attained by providing a retractable emergency wash fountain equipped with a base having an internal valve and a cylindrical rotary cam for operating this valve. The swinging spray head of the fountain is operatively connected with the cam in such a way that when the spray head is swung from its retracted position to its washing position, the cam is rotated to open the valve and admit water under pressure to the spray head. When the spray head is returned to its retracted position, the cam is rotated in the opposite direction to effect return of the valve to its closed position. In the illustrative embodiment of the invention, rotation of the cam during return of the spray head to its retracted position releases the valve for return to its closed position, which return is actually effected by the combined action of spring pressure and water pressure. These various parts of the invention are arranged in a unique way which accomplishes the objects set forth above.

The presently preferred, illustrative embodiment of the invention will now be described in detail by reference to the attached drawing, wherein:

FIG. 1 is a view in perspective of the present retract-

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able emergency wash fountain showing, in solid lines, the spray head of the fountain in its retracted position and, in phantom lines, the spray head of the fountain in its washing position;

FIG. 2 is a vertical section through the mounting base of the fountain;

FIG. 3 is a section taken along line 3-3 in FIG. 2;

FIG. 4 is a section taken along the line 4-4 in FIG. 2;

FIG. 5 is a section taken along line 5-5 in FIG. 2;

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FIG. 6 is a section taken along line 6-6 in FIG. 4.

The retractable emergency wash fountain illustrated in this drawing is denoted in its entirety by the numeral 10 and, as already noted, is made up of a mounting base 12 and a swingable spray head 14. Mounting base 12 consists of a casting formed at its lower end with flanges 16 having apertures 18 to receive mounting screws for attaching the base to a supporting surface, such as drain-board 20 of a sink 22, as illustrated. The casting which forms the base 12 includes, further, an intermediate upstanding portion or pedestal 24 and a generally cylindrical crosshead portion 26 at the upper end of the upstanding portion 24.

Extending upwardly through the upstanding portion 24 of the base 12 is an opening 28 in which is slidably received an insert 30. This insert is sealed to the base by an O-ring 32. Insert 30 has a bore 34 extending axially into its lower end, which bore continues at its upper end in a reduced bore 36. Extending into the upper end of the insert are a plurality of circumferentially spaced bores 38 which communicate with the upper end of the reduced bore 36, as shown. Also extending into the upper end of the insert 30, on its central axis, is a bore 42 which opens at its lower end into the bore 36. Fixed in the reduced bore 36 of the insert 30 is an annular valve seat member 44. This valve seat member includes a lower, downwardly depending, circular rim 46 having a rounded external surface and forming the valve seat proper of the valve seat member 44. Bore 34 in insert 30, the central opening 48 in the valve seat member 44, and the circumferentially spaced bores 38 in the insert 30 define, in the mounting base 12, a water passage 50 through which water flows in the upward direction indicated during operation of the fountain.

The numeral 52 denotes a movable valve for closing the passage 50. This valve includes a cylindrical valve stem 54 which is slidably guided in the bore 42 of insert 30 for vertical movement along the axis of the passage 50. On the lower end of this valve stem is fixed a cylindrical valve head or disc 56 having an upwardly opening annular groove in which is fixed a yieldable sealing ring 58. Sealing ring 58 is adapted for contact with the valve seat 46 when the valve 52 is in its upper limiting closed position of FIG. 2. Threaded in the lower end of the base opening 28 is an insert 60. The upper face of this insert is shaped to form a seat for the lower end of a compression spring 62, the upper end of which engages a spring seat on the lower face of the valve head 56. Spring 62, therefore, urges the valve 52 upwardly to its closed position in which the seal ring 58 of the valve engages the valve seat 46 to close the water passage 50. Extending through the insert 60 is a circular opening 64 which forms a water inlet, opening to the lower end of the water passage 50. This water inlet is adapted to receive a nipple 66 of a water supply system and is formed with a groove containing an O-ring 68 which affords a seal between the nipple and the mounting base 12.

Extending axially through the crosshead portion 26 of the mounting base casting and opening through opposite ends of the crosshead is a bore 70. Rotatably fitted

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in this bore, at a position intermediate its ends, is a cylindrical cam 72. A slot 74 is cut in the cam 72 at its center, the bottom surface 76 of which slot has the configuration illustrated in FIGS. 4 and 5 and forms a cam surface. Valve stem 54 fits in the cam slot 74 and has its upper end in contact with the cam surface 76. This cam surface is shaped so that when the cam is rotated in the counterclockwise direction between its position of FIG. 4 and its position of FIG. 5, the valve 52 is forced downwardly, against the action of spring 62, to disengage the valve seal ring 58 from the valve seat 46 and thereby open the water passage 50 to flow of water from the inlet 64 upwardly through the passage 50. When the cam 72 is rotated in the clockwise direction from its position of FIG. 5 to its position of FIG. 4, the valve 52 is permitted to return to its closed position, to close the passage 50, by the action of the spring 62.

Spray head 14 consists of two tubular spray bars 78 having straight, parallel portions 80 and inturned ends 82 terminating in coaxial, cylindrical portions 84. These coaxial portions of the spray bars are rotatably fitted in the ends of the supporting base bore 70 to support the spray head 14 for swinging movement on the supporting base between the upright retracted or storage position of FIG. 1 and the horizontal washing position of that figure. Extending between the spray bars 80 is a crossbar 86 which is rigidly attached at its ends to the spray bars 80 to join the latter into a rigid structure. This crossbar also serves as a convenient handle for swinging the spray head 14 between its retracted and washing positions.

The ends of the crosshead portion 26 of the supporting base casting are circularly recessed, as indicated at 88. Rigidly fixed to the axially aligned ends 84 of the spray bars and positioned within these recesses are plates 90 which are shaped in the manner best illustrated in FIG. 3. Threaded in the ends of the crosshead portion 26 within the recesses 92 of the plates 90 are stop screws 94. The radial shoulders 96 formed on the plates 90 by the recesses 92 in the plates and the stop screws 94 provide cooperating stop means on the mounting base 12 and the spray head 14 which limit swinging movement of the spray head in one direction to its horizontal washing position and in the opposite direction to its upright retracted position.

Extending through the spray bars are water passages 98 which open at one end through the coaxial ends 84 of the spray bars 78. Cam 72 is formed with water passages 100 having radially extending ends which communicate with the water passage 50 in the mounting base 12 and axially extending ends which communicate with the water passages 98 in the spray bars 78. Water passages 100 in the cam 72, therefore, serve to communicate the water passage 50 in the mounting base 12 and the water passages 98 in the spray bars.

The coaxial ends 84 are axially slotted, as indicated at 102, to receive axially extending tongues 104 on the ends of the cam 72. Slots 102 and tongues 104 provide connections between the spray head 14 and the cam 72, whereby the latter is rotated in one direction to open the valve 52 upon swinging of the spray head 14 to its horizontal washing position and in the opposite direction to effect return of the valve to its closed position upon swinging of the spray head to its vertical, retracted position.

Formed in the outer ends of the spray bars 80 are water discharge openings 106 which are arranged, as shown, to direct water into the space between the spray bars in inwardly and upwardly directed arcs. The pressure of the water delivered to the wash fountain is so adjusted and the water discharge openings 106 are so oriented that the water streams issuing from the openings strike the face and forehead of the person whose head is positioned between the spray bars, when the latter are in their horizontal washing position, generally tangentially. In this way, foreign matter on the face of the user is effectively washed away rather than driven into the skin

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of the user. This is especially important around the area of the eyes in order to avoid driving of the foreign matter into the eyes.

The operation of the described wash fountain is believed to be obvious from the foregoing description. Thus, when the spray head 14 is swung downwardly to its horizontal washing position, the cam 72 is rotated to open the valve 52 and thereby permit water to flow from the inlet 64 of the fountain, through the passage 50 in the mounting base 12 and the passage 100 in the cam to the passage 98 in the spray bars 78. Water then flows through these latter passages to the discharge openings 106 in the spray bars. When the spray head is returned to its vertical retracted position, the valve 52 is returned to its closed position by the spring 62 to cut off the supply of water to the spray bars.

While the illustrated wash fountain has a water inlet in the lower end of the supporting base 12, the fountain may be fed through a side inlet opening (not shown) in the mounting base. In this case, the insert 60 threaded in the lower end of the mounting base opening 28 will be replaced by a plug for closing the lower end of this opening and seating the lower end of the valve spring 62. Also, while the illustrated wash fountain is designed to be mounted on the drainboard 20 at the rear of a sink 22, may be modified to permit it to be mounted on the drainboard at the side of the sink by using spray bars which are bent to extend parallel to the swinging axis of the spray head 14 on the mounting base 12. A shield 108 may be placed, as shown, to protect the spray head against contaminants falling from above when the spray head is in its retracted position.

Clearly, therefore, the invention herein described and illustrated is fully capable of attaining the objects and advantages preliminarily set forth. While a presently preferred embodiment of the invention has been disclosed for illustrative purposes, numerous modifications in the design, arrangement of parts, and instrumentalities of the invention, other than those specifically mentioned above, are possible within the spirit and scope of the following claims.

What is claimed is:

1. A retractable emergency wash fountain, comprising:
 - a supporting base having a bore opening at one end to the exterior of said base and a water inlet passage extending transversely of and communicating at one end with said bore;
 - a spray head having a tubular end journaled in said bore including a cylindrical cam body located directly opposite said one end of said passage;
 - said cam body having an external, circumferentially extending groove, the depth of which varies around the body, whereby the bottom wall of said groove defines a cam surface;
 - a valve mounted for axial movement in said passage and including a valve stem engaging in said groove;
 - a spring acting between said base and valve for urging the latter toward said cam body to a position in which the end of said stem seats against said cam surface, whereby said valve is moved axially by swinging of the spray head;
 - said spray head being swingable between retracted and washing positions with respect to said base and said valve being movable to a first position upon swinging of said spray head to said retracted position and to a second position upon swinging of said spray head to said washing position;
 - a valve seat disposed about said passage for engagement by said valve to close said passage when said valve occupies its first position, said valve being spaced from said seat to open said passage when the valve occupies its second position; and
 - said spray head having a water passage extending axially through said tubular end and said cam body to a position opposite said passage and then radially

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to the exterior of said cam body into communication with said inlet passage.

2. A retractable emergency wash fountain, comprising:

- a supporting base having a bore opening at one end to the exterior of said base and a water inlet passage extending transversely of and communicating at one end with said bore;
- a cylindrical cam body journaled in said bore directly opposite said one end of said passage;
- a spray head having a tubular end extending into said one end of and journaled in said bore;

interfitting, axially engageable and disengageable means on said tubular end and said cam body forming a driving connection therebetween, whereby said cam body rotates with said tubular end;

said cam body having an external, circumferentially extending groove, the depth of which varies around the body, whereby the bottom wall of said groove defines a cam surface;

- a valve mounted for axial movement in said passage and including a valve stem engaging in said groove;
- a spring acting between said base and valve for urging the latter toward said cam body to a position in which the end of said stem seats against said cam surface, whereby said valve is moved axially by swinging of the spray head;

said spray head being swingable between retracted and washing positions with respect to said base and said valve being movable to a first position upon swinging of said spray head to said retracted position and to a second position upon swinging of said spray head to said washing position;

- a valve seat disposed about said passage for engagement by said valve to close said passage when said valve occupies its first position, said valve being spaced from said seat to open said passage when the valve occupies its second position; and

said spray head having a water passage extending axially through said tubular end and said cam body to a position opposite said passage and then radially to the exterior of said cam body into communication with said inlet passage.

3. A retractable emergency wash fountain, comprising:

- a supporting base having a bore opening at its ends to the exterior of said base and a water inlet passage extending transversely of and communicating at one end with said bore intermediate the ends of the bore;
- a spray head having tubular ends journaled in the ends, respectively, of said bore and including a cylindrical cam body located directly opposite said one end of said passage;

said cam body having an external, circumferentially extending groove, the depth of which varies around the body, whereby the bottom wall of said groove defines a cam surface;

- a valve mounted for axial movement in said passage and including a valve stem engaging in said groove;
- a spring acting between said base and valve for urging the latter toward said cam body to a position in which the end of said stem seats against said cam surface, whereby said valve is moved axially by swinging of the spray head;

said spray head being swingable between retracted

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and washing positions with respect to said base and said valve being movable to a first position upon swinging of said spray head to said retracted position and to a second position upon swinging of said spray head to said washing position;

- a valve seat disposed about said passage for engagement by said valve to close said passage when said valve occupies its first position, said valve being spaced from said seat to open said passage when the valve occupies its second position; and

said spray head having water passages extending axially through said tubular ends and said cam to a position directly opposite said passage and then radially to the exterior of said cam body into communication with said inlet passage.

4. A retractable emergency wash fountain, comprising:

- a supporting base having a bore opening at its ends to the exterior of said base and a water inlet passage extending transversely of and communicating at one end with said bore intermediate the ends of said bore;
- a cylindrical cam body journaled in said bore directly opposite said one end of said passage;
- a spray head having tubular ends journaled in the ends, respectively, of said bore;

interfitting, axially engageable and disengageable means on said tubular ends and said cam body drivably coupling the latter and said tubular ends, whereby said cam body rotates with said tubular ends;

said cam body having an external, circumferentially extending groove, the depth of which varies around the body, whereby the bottom wall of said groove defines a cam surface;

- a valve mounted for axial movement in said passage and including a valve stem engaging in said groove;
- a spring acting between said base and valve for urging the latter toward said cam body to a position in which the end of said stem seats against said cam surface, whereby said valve is moved axially by swinging of the spray head;

said spray head being swingable between retracted and washing positions with respect to said base and said valve being movable to a first position upon swinging of said spray head to said retracted position and to a second position upon swinging of said spray head to said washing position;

- a valve seat disposed about said passage for engagement by said valve to close said passage when said valve occupies its first position, said valve being spaced from said seat to open said passage when the valve occupies its second position; and

said spray head having water passages extending axially through said tubular ends and said cam body to a position directly opposite said passage and then radially to the exterior of said cam body into communication with said inlet passage.

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