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F. H. GOYETTE ET AL

2,987,262

REMOVABLE AND REPLACEABLE SHOWER DEVICE

Filed Nov. 24, 1959

FIG. 1

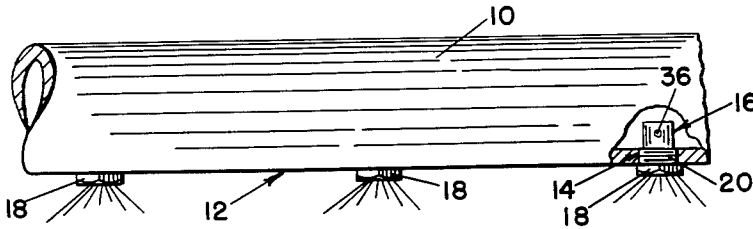


FIG. 2

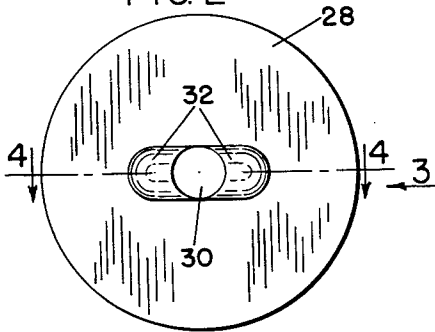


FIG. 3

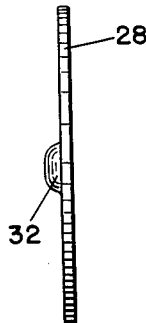


FIG. 4

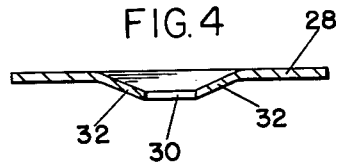


FIG. 5

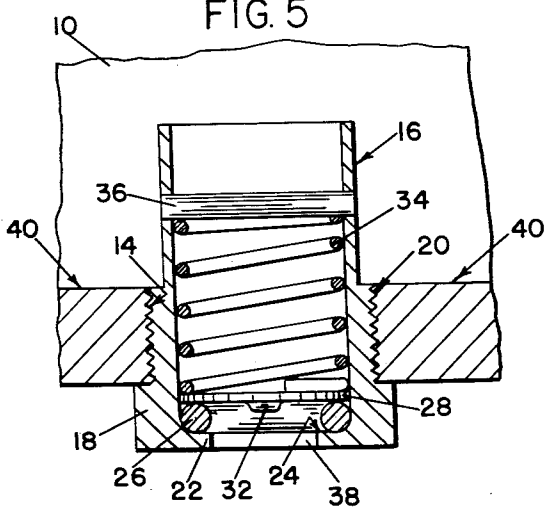
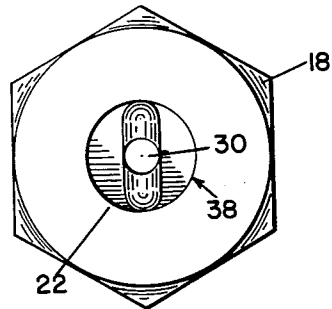


FIG. 6



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REMOVABLE AND REPLACEABLE SHOWER DEVICE

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4 Claims. (Cl. 239-550)

This invention relates to a new and improved shower particularly adapted for use in industrial applications, as for instance in paper-making, for head boxes, Fourdrinier wires, felts, washers, screens, filters, separators, etc.

The principal object of the present invention is to provide a very simple and inexpensive device which is quickly and easily removed and replaced in the shower-head in order to provide showers of different contour or spread, so that it is quick and easy to change from one spray pattern to another or to shift to a different volume of water to be sprayed.

It is pointed out that in the prior art, the showers have been formed by making a relatively thick and expensive milled-out disc which is threaded and soldered in place in the shower-head, so that it is fixed, and this makes it very difficult to remove and replace the shower or spray-forming disc or to adjust it when it is desired to vary the pattern, flow or angle of spray. Furthermore, the prior art discs, being milled out of heavy stock, are very expensive compared with the discs of the present invention since by the novel construction the discs are stamped out at a minimum of expense.

Other objects of the invention include the provision of a novel construction for holding, positioning and locating the novel discs in place, and including a removable pin-held spring or similar means for removably holding the novel discs in place, the discs being easily rotatably adjusted in situ to change the angle of the spray.

A still further object of the invention resides in the provision of a pressed metal shower spray-forming disc which is comparatively thin in section and which has an aperture generally through the center thereof for emitting the shower spray water in combination with depressed areas generally more or less radially formed, these depressed areas forming in effect a trough of which the aperture is in the center, the disc being placed in the shower-head with the depressed trough extending outwardly, this construction providing for a uniform fan-shaped spray which is quickly and easily varied in spray shape and in volume by changing the discs as described.

A still further object of the invention resides in the provision of a hollow removable plug having an exterior flange to abut the shower-head and an interior flange to position the disc, there being means such as exterior screw threads on the plug to secure it to the shower-head with the main body of the plug in the shower-head, said plug including a removable pin and a spring to loosely position the disc against the interior flange where it is held by water pressure but can be rotated without removing the plug, this construction also aiding in the avoidance of dirt and particles in general from plugging the aperture in the disc.

The invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly set forth in the appended claims.

Reference is to be had to the accompanying drawings, in which

FIG. 1 is an elevational view, partly in section, illustrating the invention in use;

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FIG. 2 is an enlarged view showing one of the new discs;

FIG. 3 is an edge view looking in the direction of arrow 3 in FIG. 2;

FIG. 4 is a still further enlarged view and is a section on line 4-4 of FIG. 2;

FIG. 5 is an enlarged sectional view showing a disc installed in a plug; and

FIG. 6 is an end view of a bushing.

In carrying out the present invention, the same is applied to a shower-head 10 which is preferably provided with a longitudinal flattened portion therein 12. This flattened portion extends generally the length of the shower-head, i.e., across the width of the machine which is to be provided with the shower-head. A series of longitudinally arranged spaced holes 14 are provided in the shower-head, these holes extending along the flat portion thereof from side-to-side of the machine, and these holes are provided with interior threads. Threadedly engaged in each hole there is a plug which is generally indicated by the reference numeral 16. Each plug is relatively elongated and hollow and is provided with an exterior flange 18 at one end thereof. This flange is provided with flats as shown in FIG. 1 so that a wrench or spanner may be applied thereto for applying the plug to the threaded apertures 14 and for removing the same therefrom. Each plug is provided with exterior screw threads 20 which engage with those at the openings 14, and it will be seen that the individual hollow plugs 16 are capable of being easily applied and removed with respect to the pipe.

Each plug is also provided with an inwardly extending circular flange at 22 adjacent flange 18. Flange 22 forms a circular shoulder 24 within the bushing at its exposed end, see FIG. 5, and on the shoulder there is disposed an O-ring 26 which forms a seal for the novel shower-head disc

The new shower-head disc is generally indicated by the reference numeral 28, see FIGS. 2, 3 and 4, and it is preferably stamped or pressed from a thin stainless steel sheet. Other materials such as copper or certain kinds of plastic might also be used. In any event, the novel disc is made of material which is capable of deformation by pressing or stamping and is very inexpensive to make. It is stamped out with a central aperture 30 for the issuance of a stream of water therethrough, see FIG. 1. In the region of the aperture 30, the disc may be provided with a more or less diametrically arranged trough or depression 32 which contains the aperture in the disc. The disc has a diameter to fit the O-ring and is stopped thereby as clearly shown in FIG. 5.

The disc is held against the O-ring by means of a coil spring 34 in turn held in position in the plug 16 by means of a removable pin 36. This pin may be a plain taper pin or it may be a well known rolled pin which may be easily removed and replaced as many times as is necessary in order to hold the spring 34 in position. Pin 36 is preferably diametrically arranged in the plug, extending across the hollow portion therein.

The depression 32 in the disc is as shown arranged in such a way as to project outwardly with relation to the aperture 38 in the bushing, which aperture 38 is defined by the inwardly directed flange 22. This forms the water into a flat fan or spray which lies at a right angle to the length of the groove 24 and shoots out straight from the pipe downwardly as indicated in FIG. 1. Of course pipe 10 may be situated in any particular position desired so that the spray is directed wherever it may be wanted, and if the depression 32 is omitted from the disc, a single high pressure stream of water is obtained.

It will be seen that the plug or bushing 16 is easily re-

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moved and replaced so that the discs 28 are also easily removed and replaced. By this means, discs of different apertures or depressions are easily provided when it is desired to vary the volume of water or to provide a different spray pattern.

The spring 34 is relatively loose and therefore the disc 28 is capable of rotation on its axis without disturbing the bushing at all. By placing a small tool such as an awl or pin through aperture 33 or in engagement with the trough, the disc 38 may be rotated to any desired position, without removing the bushing, and thus changing the plane of the spray as desired. The pressure of the water issuing through the plug 16 holds the disc 28 in place and it will not leak as long as the O-ring 26 is in position.

It is also to be noted that the plug or bushing 16 extends inwardly a considerable distance relative to the inner wall of the shower-head pipe. Dirt and other detritus tends to fall down and be located on the lower surface of the inside of the pipe in the area indicated at 40. Without the inwardly extending circular wall which is provided for by the interior end of the plug, the dirt of course would be forced through the aperture, tending to plug it.

Having thus described our invention and the advantages thereof, we do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what we claim is:

1. In a shower-head having a walled chamber and an aperture in the wall thereof, the combination therewith of a hollow plug having a substantially uniform inner diameter from end-to-end thereof, means to removably secure the plug in the aperture, said hollow plug providing for the passage of water from the chamber, an apertured disc located in said plug, an internal shoulder in the plug at one end, removable means holding the disc removably in position against the shoulder and a depression in said disc adjacent the aperture to form a spray of water, said plug extending well into the shower-head and providing an inwardly directed, generally cylindrical wall located within the chamber.

2. In a shower-head having a walled chamber and an aperture in the wall thereof, the combination therewith of a hollow plug open at both ends, means to removably secure the plug in the aperture, said hollow plug providing for the passage of water from the chamber, an internal shoulder in the plug, an apertured disc located in said

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plug against the shoulder, means holding the disc removably in position, and a depression in said disc adjacent the aperture to form a spray of water, said plug providing an inwardly directed, generally cylindrical wall located within the chamber and having a uniform inner diameter, said disc holding means including a removable pin extending substantially diametrically through the wall of the plug and a spring in said plug held in position by said pin, said spring bearing on the disc.

3. A shower-head comprising a walled chamber having an aperture therein, a hollow plug removably mounted in said aperture, said plug having a wall extending into the chamber and an exterior flange at one end thereof to abut the exterior wall of the chamber, said plug being hollow, said plug having an interior flange forming an inwardly directed shoulder about a central opening adjacent the same end, a sealing ring mounted on the inwardly projecting shoulder, a thin disc mounted on said sealing ring, said disc having a central aperture therein, and means loosely and removably holding said disc in position with the aperture in said disc aligned with the opening in the plug defined by the interior flange, said means including a spring bearing on the disc and means removably holding the spring in position in the plug.

4. The shower-head of claim 3 wherein said spring is loose enough to allow the disc to be rotated without removing the spring, the aperture in the disc being elongated, so that the shower is directed in a fan according to the rotative position of the disc.

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