J. R. DICKERSON.

STEAM WASHING MACHINE.

APPLICATION FILED APR. 19, 1913.

1,089,334.

Patented Mar. 3, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

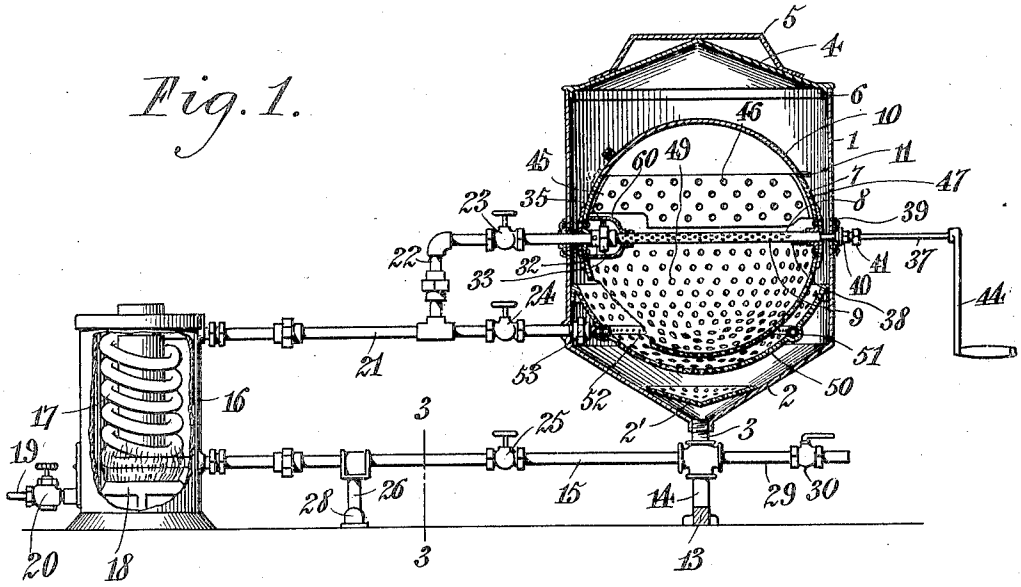


Fig. 2.

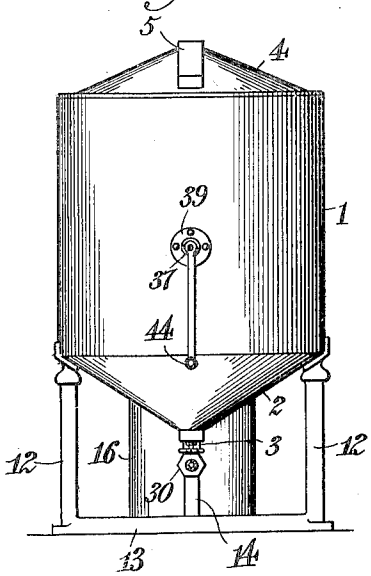
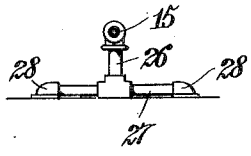


Fig. 3.



Witnesses:

Christ Feinle, Jr.,

R. M. Smith.

Inventor,

J. R. Dickerson.

By Victor J. Evans,

Attorney.

J. R. DICKERSON.

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2 SHEETS—SHEET 2.

Fig. 4.

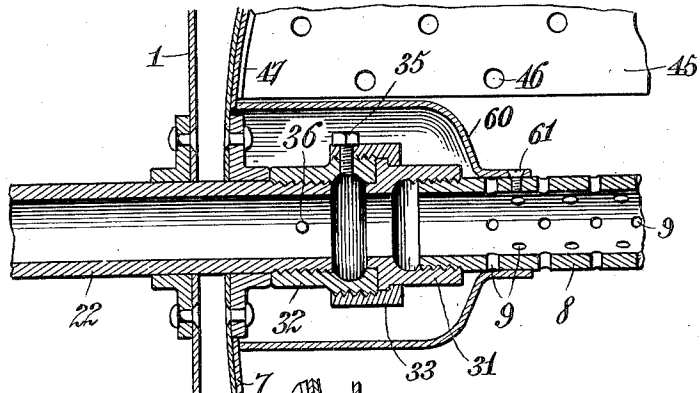


Fig. 5.

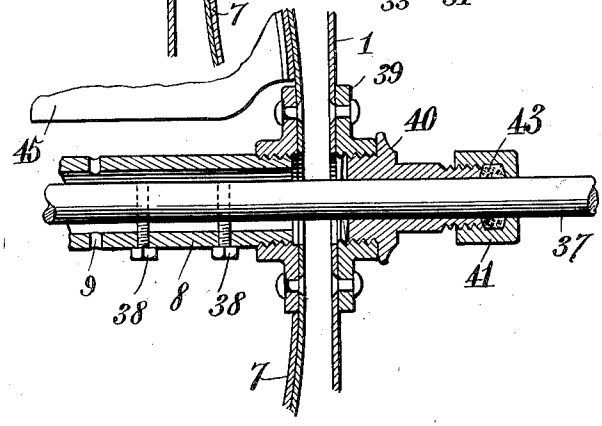
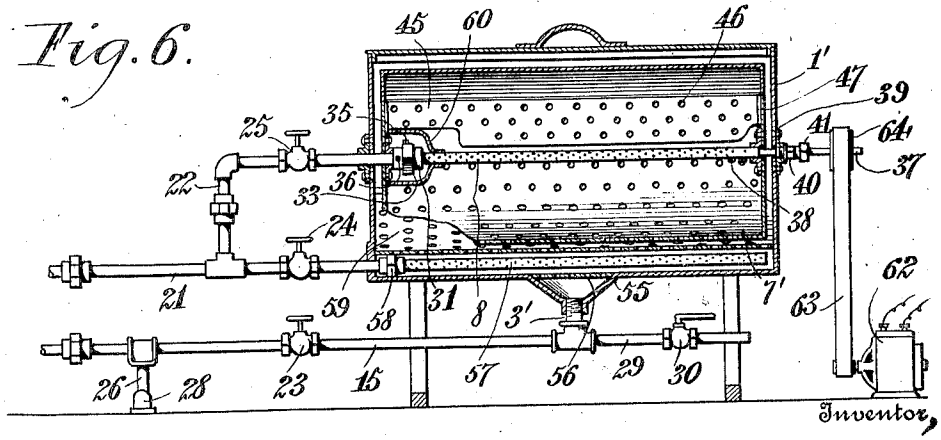


Fig. 6.



Inventor,

J. R. Dickerson.

By Victor J. Evans,

Attorney.

Witnesses:

Christ Feinleyk,

R. M. Smith.

UNITED STATES PATENT OFFICE.

JOSEPH RICHARD DICKERSON, OF SAN AUGUSTINE, TEXAS.

STEAM WASHING-MACHINE.

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To all whom it may concern:

Be it known that I, JOSEPH R. DICKERSON, a citizen of the United States, residing at San Augustine, in the county of San Augustine and State of Texas, have invented new and useful Improvements in Steam Washing-Machines, of which the following is a specification.

This invention relates to steam washing machines, the object of the invention being to provide a washing machine of the class referred to, embodying, in connection with a suitable steam drum or boiler and means for producing a circulation of steam and hot water through the same, a clothes container or receptacle rotatably mounted in said drum or boiler for producing the necessary agitation of the clothing contained therein, during the steaming and boiling operation, the said receptacle or container being mounted in a novel manner so as to adapt it to be removed from the drum or boiler, permitting the latter to be used for boiling and cleansing heavier goods.

A further object of the invention is to provide, in connection with such boiler and rotary clothes receptacle, a circulatory system, by means of which the steam may be controlled and admitted to different points of the machine and discharged into the clothes in a large number of jets or sprays, so as to subject every particle of the clothing or goods in the receptacle to the action of the steam.

With the above and other objects in view, the invention consists in the construction, combination and arrangement of parts, as will be hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claims hereunto appended.

In the drawings: Figure 1 is a side elevation, partly in section, of a steam washing machine embodying the present invention. Fig. 2 is an end elevation of the same. Fig. 3 is a cross section on the line 3—3 of Fig. 1. Fig. 4 is an enlarged detail section of the coupling connection at one side of the boiler. Fig. 5 is a similar view of the coupling at the opposite side of the boiler. Fig. 6 is a vertical longitudinal section through a machine of modified shape and larger capacity.

The steam washing machine contemplated in this invention comprises, in the preferred embodiment thereof, as illustrated in Figs. 1 to 5, inclusive, a cylindrical drum or boiler 1 which stands vertically and is provided with an inverted conical bottom 2, to the center of which is connected an outlet pipe 3 covered by a concavo-convex screen 2′ which prevents small articles from getting into the outlet. The upper end of the boiler 1 is closed by a cover 4 which is also preferably conical in shape and provided with a suitable lifting handle 5, said cover being flanged, as at 6, to fit tightly over the upper end of the boiler or drum.

Mounted rotatably in the boiler 1 is a clothes receptacle or container 7 which, as shown in Fig. 1, is substantially spherical and hollow and mounted on a horizontal shaft 8 which is hollow or tubular and provided with a large number of small perforations 9, through which the steam admitted at one end of said hollow shaft is sprayed into and upon the clothes or other material contained in the receptacle 7. This receptacle is provided with a cover 10 forming a symmetrical section of the body and hinged thereto at one side, as indicated at 11, and fastened at the opposite side by a catch of any suitable description, so that the cover will be held properly in position during the rotation of the receptacle.

The boiler 1 is supported by a suitable frame, shown as consisting simply of a pair of uprights or posts 12 connected at or near the bottom by a cross brace 13. The supporting frame is also shown as comprising a central relatively short post 14 having an opening therethrough which supports a pipe 15 which is connected by an elbow to the outlet pipe 3 of the boiler. The pipe 15 extends to any suitable distance from the boiler and connects with the lower end of a steam generator 16, shown as consisting of one or more steam coils 17, beneath which is placed a burner 18 of any suitable description, the same being shown in the form of an oil burner, to which the oil is led by a suitable feed pipe 19 controlled by a valve or stop cock 20, by the adjustment of which the flow of oil to the burner may be regulated.

Extending from the upper end of the generator 16 back into the lower part of the boiler 1 is a return pipe 21, and from a point intermediate the length of the pipe 21 a branch pipe 22 leads into the hollow shaft 8 of the rotary clothes receptacle. The pipe 15 is provided with a valve or

cock 25, by means of which the rapidity of flow of the water through said pipe may be regulated by partially or wholly opening said valve. The pipe 21 is also provided with a valve 24 adjacent to the boiler 1, and between said boiler and the point where the branch pipe 22 connects with the pipe 21, and the branch pipe 22 is also provided with a valve 23. By means of the two valves 24 and 23, the steam may be allowed to pass either into the bottom portion of the boiler 1 or into the hollow perforated shaft 8, or a portion of the steam may be admitted at one place and the remainder of the steam at the other place, according to the nature of the work being performed. An additional supporting post 26 extends from the pipe 15 downwardly and connects to a cross bar 27 having downwardly projecting feet 28 which rest on the floor. In this way, the pipe 15 is supported at a suitable distance from the boiler, which has its own independent support, as hereinabove described.

29 designates a drain pipe leading off from the elbow connection between the pipes 3 and 15, said drain pipe being provided with a waste valve 30, by opening which the water may be drained off from the boiler, the generator and the system of pipes connecting the same.

At one end, the hollow perforated shaft 8 is provided with an end section 31 formed with an annular shoulder which is received in a union 32 on the inner end of the pipe 22, hereinabove described, said union being externally threaded to receive a clamping nut 33, the nut and union being provided with radial holes adapting a cotter pin 35 or the like to be inserted through the holes, for the purpose of locking together the parts forming the union.

By proper adjustment of the parts of the union, a practically steam-tight joint may be formed at this point. The union 32 and the inner end of the pipe 22 which fits into said union are provided with radial holes adapted to receive another cotter pin 36 or the like, which is insertible therethrough for the purpose of locking said parts together. By the removal of the cotter pins 35 and 36 referred to, the tubular shaft 8 may be disconnected from the pipe 22, in order to permit the container or receptacle 7 to be removed from the boiler 1. At its opposite end, the receptacle 7 is supported by a shaft 37, the inner end of which is inserted into the corresponding end of the tubular perforated shaft 8, as shown in the detail view Fig. 5, and locked in place by inserting one or more screws 38, or their equivalent, through the registering holes in the shafts 37 and 8.

Secured to the outer side of the boiler 1 is a flange 39, into which is screwed the inner member 40 of a stuffing box, the outer member 41 of which is threaded upon the inner member 40, the shaft 37 passing through both members, as clearly shown. Packing 43 within the stuffing box fits closely around the shaft 37, and is compressed by tightening the outer member of the box upon the inner member thereof, thereby preventing any leakage of water or steam from the boiler at this point. On the outer end of the shaft 37 is mounted a hand-operated crank 44, by means of which the clothes receptacle or container 7 is revolved at any desired rate of speed.

Secured within the receptacle 7, adjacent to the shaft 8, is a splash plate 45 provided with openings 46, and having end flanges 47 which are riveted or otherwise secured to the receptacle, as shown, the said splash plate serving to agitate the clothes contained in the receptacle, so as to loosen up the same and subject them to the action of the steam passing in through the perforations in the hollow shaft 8, and also the water contained in the bottom of the boiler. Ordinarily, sufficient water will be placed in the boiler to bring the level thereof to a point considerably above the bottom of the receptacle 7, so that the clothes will be immersed therein a portion of the time.

From the foregoing description, it will now be understood that when the receptacle 7, containing the clothes to be washed, is revolved, the clothes are carried downwardly through the boiling water in the bottom of the machine, and then gradually lifted and agitated by the action of the splash plate. At the same time, if desired, steam may be admitted through the pipe 22 and sprayed out through the perforated hollow shaft 8 into the clothes, as they are lifted by the action of the receptacle. The clothes are thus alternately subjected to the action of the steam and hot water, and rapidly cleansed. For heavier goods, the clothes receptacle 7 may be removed from the boiler by disconnecting the same in the manner above described and removing said receptacle entirely from the boiler. The feature of making the clothes receptacle removable also enables said receptacle to be thoroughly cleaned from time to time, and freed from particles of soap and other foreign matter, which may adhere thereto, the receptacle 7 being provided throughout the greater portion of its extent with perforations 49 to admit of the steam and hot water passing back and forth through the same and the clothes contained therein. To provide for washing heavier goods, such as bed spreads, quilts, and the like, a concavo-convex screen 50 is fastened in the lower portion of the body 1, as shown in Fig. 1, and provided with an annular gutter 51, in which is arranged a circular spray or distributing pipe

52 having perforations extending all the way around the inner side thereof, so as to spray the steam and hot suds water inwardly within the concavo-convex screen 50, which is adapted to support such heavier goods. The circular pipe 52 is connected to the pipe 21 by means of a coupling 53. By manipulating the valves 23 and 24, steam and hot water may be admitted at both places, or the same may be cut off at either point of entrance of the inlet pipes into the body 1.

In Fig. 6, I have illustrated a machine of somewhat different shape, embodying, however, the same principle as that illustrated in Figs. 1 and 2. In said Fig. 6, both the boiler 1′ and the clothes receptacle 7′ are cylindrical in shape and arranged horizontally, the boiler 1′ being provided, about centrally of the bottom thereof, with an inverted conical pocket 55, to the bottom of which is connected the outlet pipe 3′. In order to adapt this form of boiler to the heavier class of goods, the body 1′ is provided centrally of the bottom thereof with a downwardly extending inverted conical pocket 55 which is covered by a protecting screen 56, the latter serving to prevent small articles from finding their way into the pipe which leads to the heater. Above the bottom of the receptacle 1′ is arranged a spray or distributing pipe 57 extending lengthwise of the body 1′ and detachably connected by a suitable coupling 58 to the pipe 21. Above the distributing pipe 57 is arranged a semi-cylindrical or concavo-convex strainer or screen 59 which, when the container 7′ is removed, is adapted to support the clothing being washed, and permit a free circulation of steam and hot suds water through the clothing. This form of machine has a larger capacity than that illustrated in Fig. 1, and in practice has been equally efficient.

The machine hereinabove described is adapted to handle all kinds of goods, from a small pocket handkerchief or hand towel to a large blanket, bed spread, or quilt, as it provides for a complete circulation of hot suds water and steam through the clothing, either in the container or in the boiler, when the container is removed therefrom. At the same time, the goods are thoroughly protected by the arrangement of screens and strainers hereinabove described.

In order to effectively protect the clothing in the container, a cuff or sleeve 60 is arranged to fit around the perforated steam shaft 8 and over the union 33, as shown in Figs. 1, 4 and 6, the larger end of said cuff fitting against the inner surface of the container, while the smaller end thereof which closely embraces the shaft 8 is secured to the shaft by means of a detachable screw 61 or its equivalent. The plate 45 is also cut away, as shown in Figs. 1 and 6, to allow the cuff 60 to be slid inwardly, so as to uncover the union 33 and allow the shafts 8 and 22 to be uncoupled by removing the screw 35, as hereinabove described. This cuff will prevent the clothing in the container from being wrapped around the steam shaft, there being no projection to catch in the clothing.

Instead of operating the machine by a hand crank, as illustrated in Fig. 1, the machine may be driven by a motor, as shown in Fig. 6, 62 designating an electric motor, from which a belt 63 extends around a pulley 64 fast on the shaft 37 in place of the crank 44.

What is claimed is:

1. A steam washing machine comprising a boiler, a rotary clothes receptacle mounted in said boiler, a cover for the boiler, a cover for said receptacle, a hollow perforated shaft extending through said receptacle and having the receptacle secured fixedly thereto, a steam supply pipe inserted through the side of the boiler and having a supporting and coupled connection with said hollow perforated shaft, a crank shaft having the end thereof removable through an opening in the opposite side of the boiler and fitted into the opposite end of said tubular shaft, and means detachably connecting said crank shaft and hollow perforated shaft of the clothes receptacle.

2. A steam washing machine comprising a boiler, a rotary perforated clothes receptacle mounted therein, a screen supported within said boiler and beneath said clothes receptacle, a perforated tubular shaft extending through said receptacle and terminally connected thereto, a steam supply pipe leading into the boiler between the clothes receptacle and the underlying screen, a branch pipe leading from said steam supply pipe into the tubular shaft of the receptacle and forming a support for said shaft, means for revolving said receptacle, valves independently controlling said steam supply and branch pipes whereby the steam may be directed into the boiler either at one point or another separately or simultaneously at both points, and an exhaust pipe leading off from the bottom of said boiler.

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

JOSEPH RICHARD DICKERSON.

Witnesses:
J. A. Blohm, Jr.,
J. W. Armstrong.