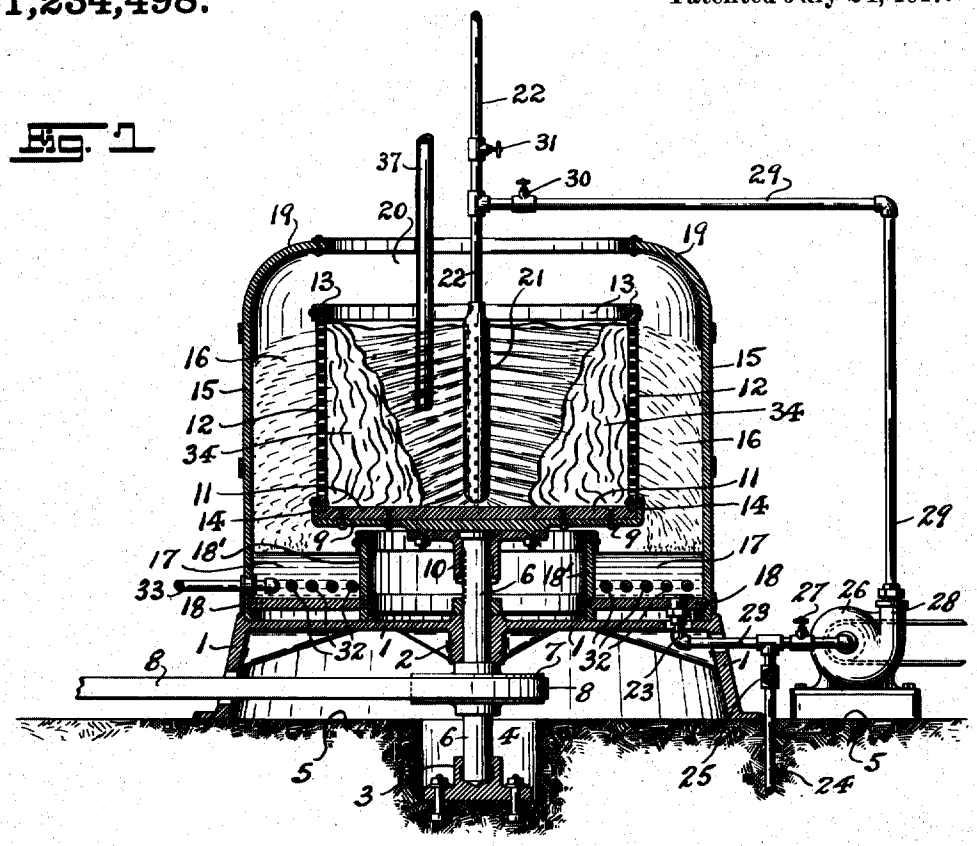
J. M. SEYMOUR, Jr.

WASHING APPARATUS.

APPLICATION FILED DEC. 9, 1916.

1,234,498. Patented July 24, 1917.

Fig. 1



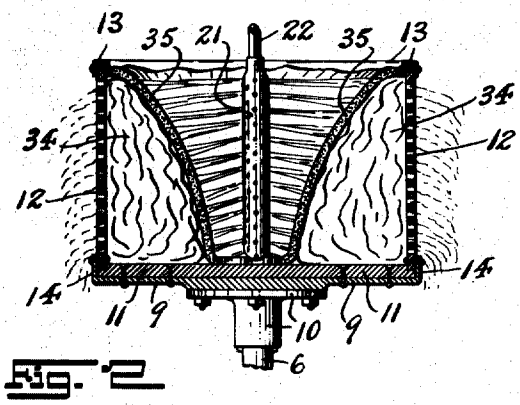


Fig. 2

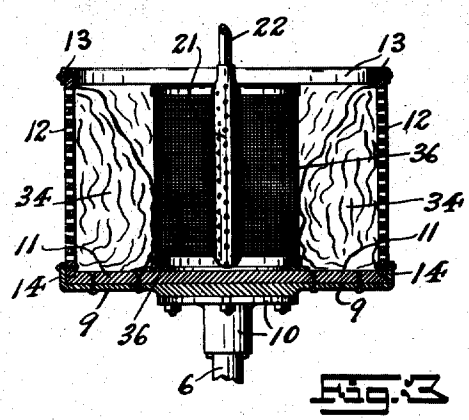


Fig. 3

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WASHING APPARATUS.

1,234,498. Specification of Letters Patent. Patented July 24, 1917.

Application filed December 9, 1916. Serial No. 136,063.

To all whom it may concern:

Be it known that I, JAMES M. SEYMOUR, Jr., a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Washing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The present invention relates, generally, to improvements in washing machines, and the like; and, the invention has reference, more particularly, to a simple and novel construction of power driven washing machine provided with a novel means for supplying and circulating a cleansing fluid to the material operated upon by the machine.

The invention has for its principal object to provide an effective and economical washing machine comprising a centrifugal wringer or extractor inclosed within a housing provided with a catch basin, and provided with a novel means for supplying, directly to the material operated upon within the wringer or extractor, during its operation, a continuous flow of water, which may be served hot, cold or impregnated to provide a cleansing fluid for direct action upon the material to be washed.

A further object of the present invention is to provide in connection with the washing machine means for circulating the cleansing fluid from the catch basin of the apparatus to the delivery jets which discharge into the extractor or wringer; and also to supply means for heating the cleansing fluid so circulated, when desired.

A still further object of this invention is to provide in connection with the material operated upon within the extractor or wringer, a filter-pad adapted to separate dirt or grease from the cleansing fluid supplied to the wringer or extractor, before such fluid contacts with the material operated upon.

Other objects of the present invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

With the various objects of the present invention in view, the same consists, primarily, in the novel construction of washing machine hereinafter set forth; and the invention consists, furthermore, in the several novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, all of which will be more fully described in the following specification, and then finally embodied in the claims which are appended to and which form an essential part of said specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a vertical longitudinal section of the novel washing machine made according to and embodying the principles of my present invention; Fig. 2 is a detail longitudinal section of the centrifugal extractor or wringer portion of the novel washing machine, illustrating the application of the novel filter-pad to material to be operated on therein; and Fig. 3 is a detail longitudinal section of a slightly modified construction of said centrifugal extractor or wringer, illustrating as arranged therewith a permanent filter-means in the form of a metallic gage partition or screen.

Similar characters of reference are employed in all of the hereinabove-described views, to indicate corresponding parts.

Referring now to the said drawings, the reference character 1 indicates a suitable base or supporting frame upon which the apparatus is mounted. Said base or supporting frame 1 is provided with a centrally disposed vertical bearing-portion 2. The reference character 3 indicates a step-bearing, which is preferably mounted in a pit 4 provided in the floor 5 upon which the apparatus is set up. The said step-bearing 3 is vertically alined beneath said bearing-portion 2, and journaled in said bearings is a vertical shaft 6, upon which is fixed a driving pulley 7, over which runs the driving belt 8 which transmits power to said shaft from any suitable source.

Affixed to the upper end of said shaft 6 is a rotary extractor or wringer drum, comprising a bottom portion 9 suitably secured by a flanged coupling 10 to said shaft 6. Said bottom portion 9 may be lined on its interior side with a wooden floor portion 11 suitably secured thereto. The cylindrical

side walls 12 of said extractor or wringer drum are preferably formed of perforated metal, through the openings of which the cleansing fluid supplied to the extractor or wringer drum may escape, after passing through the clothes or other material operated upon within the same. The upper marginal edges of said side walls thus constructed may be bound by a marginal flanged reinforcing member 13, and the lower end of said side walls 12 may be secured to an upwardly extending annular flange 14 connected with said bottom portion 9, or formed integrally therewith. The upper end of said extractor or wringer drum is preferably left open.

Supported upon said base or supporting frame 1 is an outer housing 15, the walls of which inclose said extractor or wringer drum, said walls being spaced away from the sides of said extractor or wringer drum, so as to leave an annular space 16 surrounding the latter, into which the cleansing fluid thrown from the extractor or wringer drum is caught. The lower end of said housing 15 is constructed to provide an annular catch-basin 17, formed by the bottom wall 18 and inner annular side walls 18'. Said catch basin extends partially beneath the bottom of said extractor or wringer drum, so as to be disposed to catch and hold the cleansing fluid ejected from said extractor or wringer drum, as the same drops through said annular space 16 provided by said housing 15. The upper end of the walls of said housing 15 are preferably curved inwardly, to provide an inwardly projecting annular flange 19 adapted to prevent the cleansing fluid ejected from the extractor or wringer drum from splashing out of the said housing. The upper end of the housing 15 is open, as at 20, above the extractor or wringer drum.

The reference character 21 indicates a discharge nozzle having a plurality of radiating vents or discharge openings. This discharge nozzle is preferably positioned within the interior of said extractor or wringer drum so as to extend vertically in a central longitudinal or axial position therein. Connected with the upper end of said discharge nozzle is a supply pipe 22, for conducting water, or other cleansing fluid, to said discharge nozzle so that the same will be ejected from the latter upon the clothes or other material placed within the extractor or wringer drum for cleansing.

Connected with the bottom of said catch basin 17 is an outlet pipe 23, with which communicates a pipe 24 adapted to discharge the water or cleansing fluid into a sewer or other place after use. A valve 25 is provided in the pipe 24, which when closed shuts off said pipe 24 from communication with said outlet-pipe 23. The outer end of said outlet-pipe 23 leads to and communicates with the inlet of a pumping mechanism, preferably in the form of a rotary pump 26, and a valve 27 is provided in said outlet pipe 23, adjacent to its entrance into said pump 26, to shut off the latter from communication with said outlet pipe 23, when desired.

Connected with the discharge end 28 of said pump 26 is a return pipe 29 which leads back to said supply pipe 22, so as to enable said pump to discharge fluid into said discharge nozzle 21, when desired. Said return pipe 29 is provided with a valve 30, which, when closed shuts off from communication with said supply pipe 22 and discharge nozzle 21 said return pipe 29 and pump 26. Said supply pipe 22 is also provided with a valve 31, which is located beyond the juncture of said return pipe 29 with said supply pipe 22, and which is adapted to shut off said discharge nozzle from communication with fluid flowing through said supply pipe 22.

Arranged within said catch basin 17, upon the bottom thereof, is a coil of steam pipe 32, which is supplied with steam from the steam supply pipe 33, for heating the cleansing fluid collected in said catch-basin 17, when it is desired so to do.

The novel construction of washing machine is operated in the following manner. The clothes 34 or other articles to be cleansed, are placed within the extractor or wringer drum, and power is applied thereto to rotate the same at a high speed. The centrifugal force developed by thus rotating said extractor or wringer drum tends to throw the clothes 34 against the side walls of the extractor or wringer drum, and to hold the same in such relation to the latter. The valve 31 in the supply pipe 22 is opened so that a cleansing fluid may be admitted to the discharge nozzle 21 within the interior of said extractor or wringer drum. The cleansing fluid is ejected from said discharge nozzle 21 in radiating streams against the annular ring of clothes 34 held against the sides of the extractor or wringer drum by the centrifugal force developed thereby, and said centrifugal force causes the cleansing fluid, upon contact with the clothes 34, to pass directly through the same with a very quickly exercised and highly efficient cleansing effect. The cleansing fluid, after thus passing through the clothes is discharged through the openings provided in the walls of said extractor or wringer drum into the annular space 16, being thus caught by the housing 15 and precipitated into the catch-basin 17 at the lower end thereof, thence the used fluid may be drained off through the pipes 23 and 24, the valve 25 being open. When it is desired to circulate the cleansing fluid for the purpose

of reusing the same in a continuation of the washing operations, the same may be accomplished as follows: After a supply of cleansing fluid is delivered to the apparatus, and a sufficient quantity thereof collected in the catch-basin 17, the valve 31 in the supply pipe 22 is closed, and the valve 25 in the discharge pipe 24 is closed. Then the valve 27 in the outlet pipe 23 is opened to permit the latter to communicate with the pump 26, and the valve 30 in the return pipe 29 is opened to permit the pump 26 to communicate with the discharge nozzle 21 through that portion of the supply pipe 22 beneath the valve 31. The pump 26 then being put in operation draws from the collected cleansing fluid in the catch-basin 17 and discharges or pumps the same back to the discharge nozzle 21, whereupon the cleansing fluid is ejected therefrom upon the clothes 34 in the extractor or wringer drum. This operation may be continued as long as desired, until the cleasing fluid has taken up the dirt and soil from the clothes. Since it is advisable to heat the cleansing fluid to procure its most efficacious effects, such heat may be supplied thereto through the steam heating coil 32 located within the catch-basin 17.

It is well known that most of the dirt and soil in and upon clothes and other materials to be washed is of a soluble character, but there is, nevertheless, a certain greasy content as well as solid content which would be returned in contact with the clothes by the circulation of the cleansing fluid carrying the same, unless it was separated from the cleansing fluid before the latter was allowed to again pass through the clothes. In order to effect such separation or removal of said greasy content and solids from the cleansing fluid I provide a filtering element adapted to be introduced between the clothes 34 and the discharge nozzle 21. Preferably this filtering element is constructed in the form of a flexible blanket 35, such as a cheese cloth pad or felt pad, adapted to be laid upon the clothes 34 as annularly disposed within the extractor or wringer drum, as shown more particularly in the detail view comprised in Fig. 2 of the drawings. The centrifugal force developed by the rapidly revolved extractor or wringer drum will act upon said filtering element or flexible blanket 35 to hold the same in proper covering and protecting contact with clothes, without necessity of employing any particular mechanical fastening means. It will be understood that the texture of said flexible blanket 35 is such that while it will readily permit the cleansing fluid to pass therethrough, and into proper cleansing contact with the clothes 34, it will nevertheless impede or hold back upon its exposed surface any greasy or solid substance, and will thus separate the latter from the cleansing fluid, for the purposes above mentioned.

In some instances it may be advisable to provide a filtering element of slightly modified form and one having a fixed relation to the extractor or wringer drum. To this end I provide a metallic gauze filter wall 36, permanently secured to the floor of the extractor or wringer drum, and providing a fixed annularly disposed filter medium interposed between the discharge nozzle 21 and the clothes receiving space within the extractor or wringer drum.

Of course it will be understood that after the clothes 34 have been thoroughly cleansed the cleaning fluid may be shut off, and by continuing the rapid rotation of the extractor or wringer drum, the fluid remaining in the clothes may be flung off, until the clothes assume the condition of partial dryness which usually follows the process of wringing the same. The drying operation may then be completed, without necessity of removing or handling the clothes, by discharging through the discharge nozzle, or an independent delivery pipe 37, superheated steam, air or other gas, which passing through the material dries out the fibrous texture thereof. It will thus be apparent that the entire washing and drying operations upon the material may be carried on, by the use of my novel apparatus, without necessity of handling and re-handling said material, thus effecting a great saving of time and labor, and therefore greatly cheapening the cost of the cleansing process.

It will also be understood, that although my present invention is described chiefly as to its use as a washing machine, and is very valuable in such art, it may also be used to great advantage in dyeing and bleaching, and in fact any purpose wherein it is desirable to bring liquids, dye colors, or bleaching materials into close and intimate contact with the fibrous materials to be treated.

I am aware that some changes may be made in the arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of my present invention as defined in the following claims. Hence, I do not limit my invention to the exact arrangements and combinations of the parts as described in the foregoing specification, nor do I limit myself to the exact details of the construction of said parts as illustrated in the accompanying drawings.

I claim:—

1. In an apparatus of the kind described, a rotary extractor drum, means for supporting the same, means for rotating the same, a housing surrounding said drum to

catch the fluid ejected therefrom, a centrally disposed vertical perforated discharge nozzle within said drum for delivering fluid horizontally upon the material deposited annularly against the walls of said drum for treatment, and an annular filter member overlying said material, said filter member comprising a flexible blanket of fibrous material held in position by centrifugal force.

2. In an apparatus of the kind described, a rotary extractor drum, means for supporting and driving the same, a housing surrounding said drum and spaced annularly therefrom, a catch-basin connected with the lower end of said housing so as to extend beneath said drum, a centrally disposed vertical perforated discharge nozzle extending into the interior of said drum, a pump, means for connecting the intake end of said pump in communication with said catch-basin, means for connecting the discharge end of said pump in communication with said discharge nozzle, and a filter member overlying the material deposited within said drum for treatment, said filter member comprising a flexible blanket of fibrous material.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 8th day of December, 1916.

JAMES M. SEYMOUR, JR.

Witnesses:
FRED'K C. FRAENTZEL,
FRED'K H. W. FRAENTZEL.