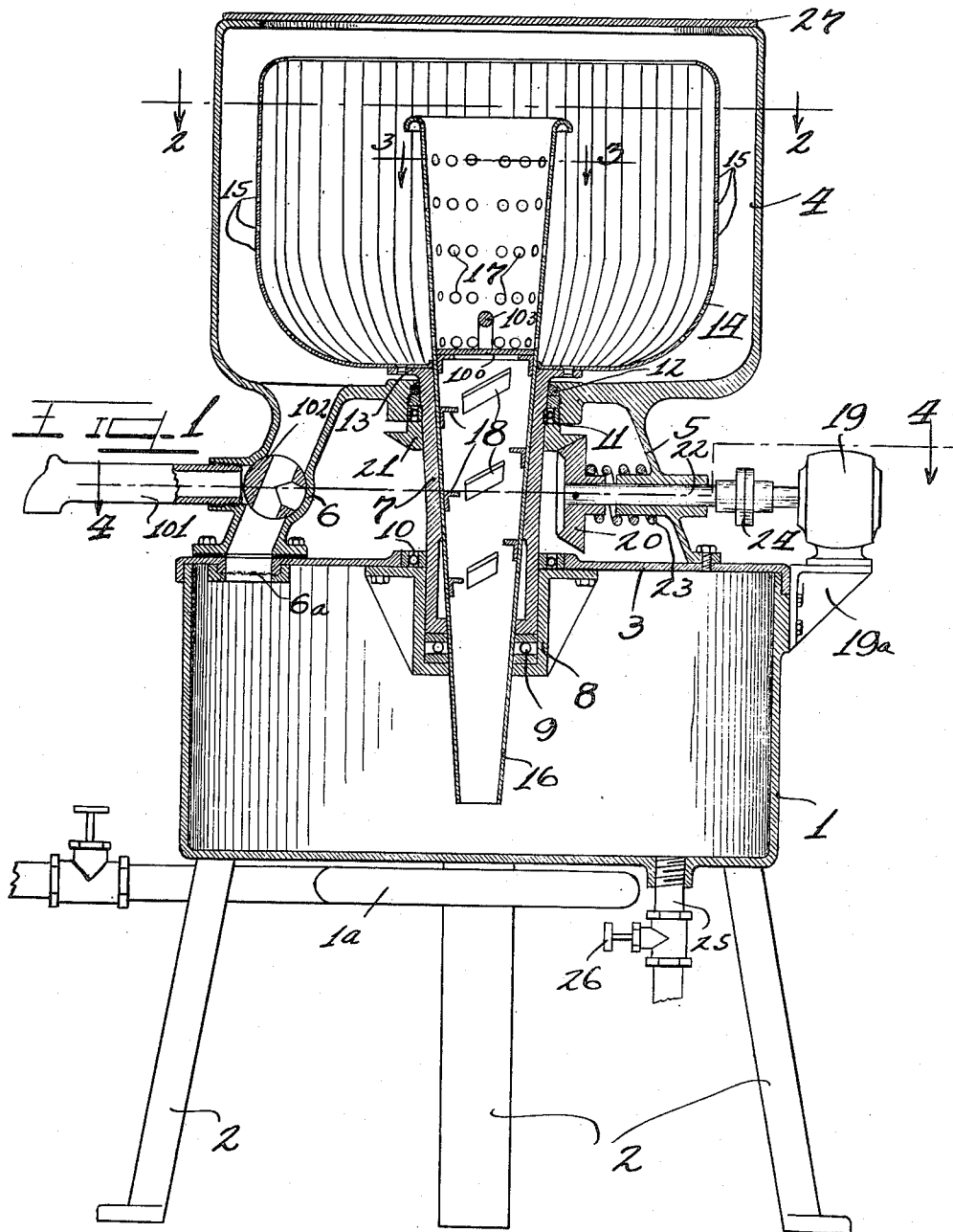


O. H. ELIEL.
WASHING MACHINE.
APPLICATION FILED SEPT 7, 1920.

1,436,701.

Patented Nov. 28, 1922.

4 SHEETS—SHEET 1.



Witnesses

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4 SHEETS—SHEET 2.

FIG. 2

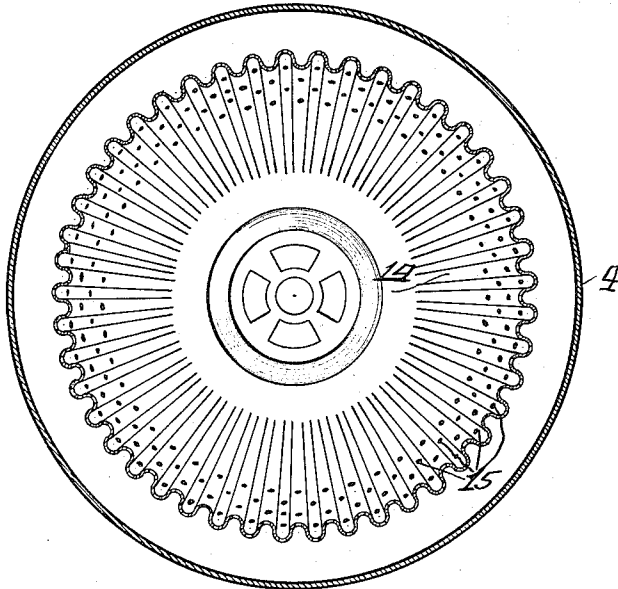


FIG. 3

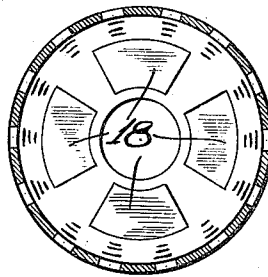
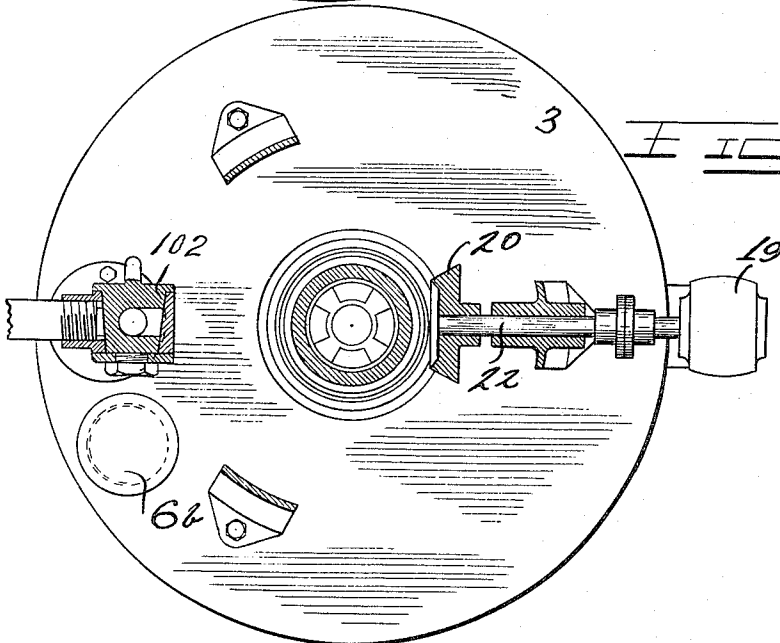


FIG. 4



WITNESSES

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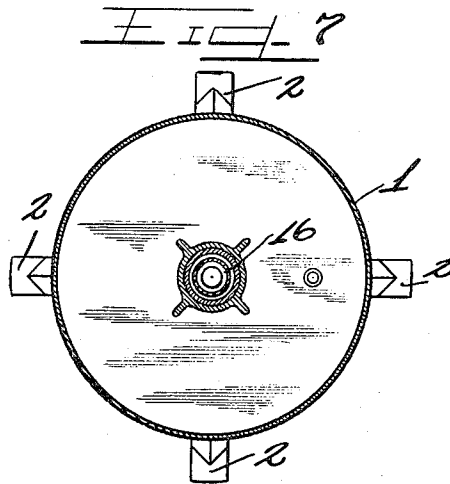
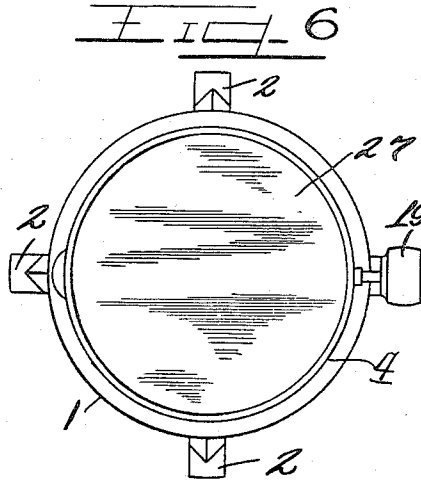
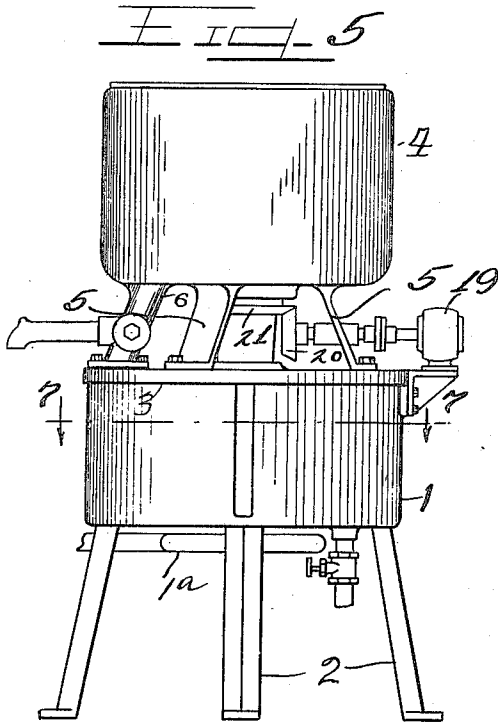
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4 SHEETS—SHEET 3.



WITNESSES

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4 SHEETS—SHEET 4.

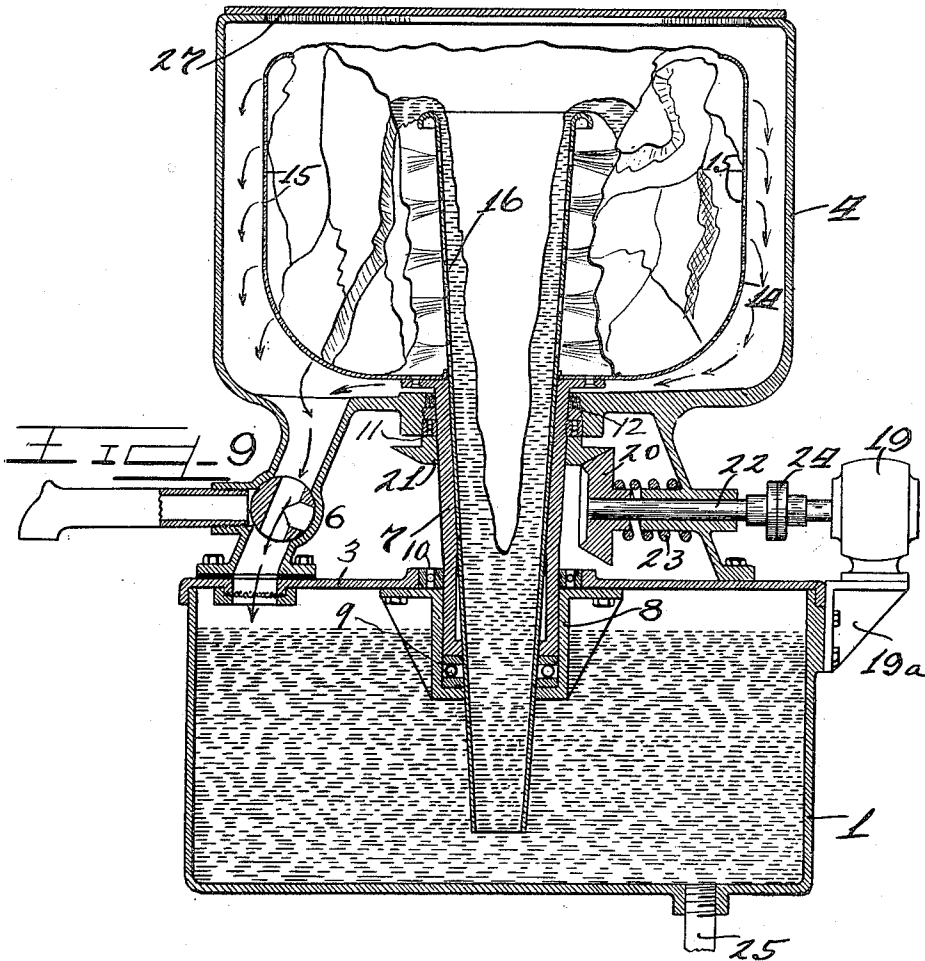
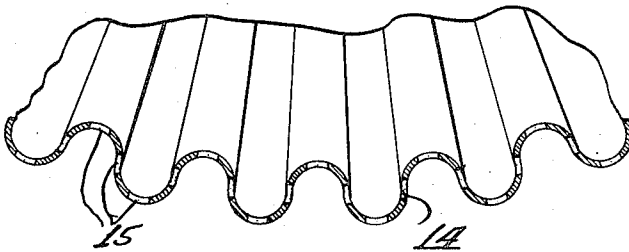


FIG. 8



WITNESSES

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Patented Nov. 28, 1922.

1,436,701

UNITED STATES PATENT OFFICE.

OSCAR H. ELIEL, OF LA SALLE, ILLINOIS.

WASHING MACHINE.

Application filed September 7, 1920. Serial No. 408,502.

To all whom it may concern:

Be it known that I, OSCAR H. ELIEL, a citizen of the United States, residing at La Salle, in the county of La Salle and State of Illinois, have invented a new and useful Improvement in Washing Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to an apparatus for washing, treating and drying clothes, in which centrifugal force and other means may be utilized to control the washing, rinsing or bluing fluid which may be contained in an independent vessel, and in which gravity acts to return the water to the fluid vessel. After the clothes have been properly washed and treated for drying purposes, it is contemplated that the fluid be removed from the vessel or shut off from the clothes holder in suitable manner, so that the clothes may be speedily dried in the centrifugal container without having been subjected to a wringing process.

It is therefore an object of this invention to provide a washing machine that contains a centrifugal washer that may be utilized as a clothes dryer.

It is a further object of this invention to utilize centrifugal force or some agency to draw the washing fluid from a fluid container to the clothes container and spray it upon the clothes.

It is an important object of this invention to provide a washing machine in which all the operations of washing, treating and drying clothes may be carried on without removing the clothes from the clothes container.

Other objects and advantages arise from the means and mechanism, their arrangement and structure as will be more apparent from the following description and disclosures in the drawings.

My invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

In the drawings:

Figure 1 is a vertical section through my improved washing machine.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is a section on the line 4—4 of Figure 1.

Figure 5 is an elevational view of my improved washing machine.

Figure 6 is a top plan view of the same.

Figure 7 is a section on the line 7—7 of Figure 5.

Figure 8 is a fragmentary section of a centrifugal clothes container that may be used in my machine.

Figure 9 is a section similar to Figure 1 showing the operation of the washing machine.

As shown in the drawings:

Referring now to the drawings, in which similar reference numerals refer to similar features in the different views, the numeral 1 represents a fluid holder or receptacle for containing the suds, rinsing or bluing water or any preparation that may be used in the process of washing clothes. In order to heat the fluid in the container 1, a gas heater 1^a or other suitable heating means are provided as shown in Fig. 1. This receptacle may be supported as desired, a plurality of legs 2 being shown as a matter of illustration. A cover 3 is provided for the receptacle upon which is supported the centrifugal washer casing 4 by means of struts or legs 5 and a fluid return pipe 6 is secured over an aperture in the cover 3. A suitable strainer 6^a is removably secured to the outlet of said fluid return pipe 6 and is adapted to remove foreign matter from the fluid circulating therethrough. Access to said strainer to remove the foreign matter may be conveniently had through a suitable opening 6^b in the cover 3. The casing 3 is preferably of cylindrical form having a journal bearing centrally of the bottom thereof to receive a hollow vertical rotatable bearing member 7 supported in a box 8 extending into the fluid receptacle and secured to the cover thereof. Thrust bearings 9 are preferably placed between the bottom of the box and the bottom of the bearing member. The cover of the fluid receptacle is provided with a central opening to receive the member 7 and support the same in bearings 10. The bearing member 7 is further provided with an anti-friction bearing 11 in the casing 4, above which a packing 12 is placed to prevent the fluid from seeping into the bearing.

The upper portion of the member 7 is also provided with a flange 13 for supporting the centrifugal clothes container 14. This clothes container may be of any suitable construction, but I prefer to make the same of corrugated sheet metal which can be easily stamped into proper shape or form. The walls of the container are provided with a plurality of holes 15 through which the fluid can escape from the container.

In order to draw the fluid into the clothes container during the washing operation so that it may be dashed or sprayed against the clothes, different means may be provided, but in the present embodiment of my invention the following mechanism has been illustrated as preferable: A cylindrical and funnel-shaped member 16 having a plurality of apertures 17 in its upper portion extends through a central aperture in the container 14, through the hollow bearing 7 and through the bearing 9 and bottom of box 8 to a point well within the fluid receptacle, the narrow portion of the member 16 being located in the fluid receptacle and the perforated upper portion being in the clothes container, the member 16 being firmly secured in the bearing 7 so as to rotate therewith. The slope of the funnel-shaped member should be so designed that sufficient fluid will be swept upwardly through centrifugal force to properly wash the clothes, according to the desired speed. It is well known that as the slope of the funnel-shaped member decreases in respect to a horizontal plane, the more fluid will be swept upwardly and less speed will be required. But the question of slope and speed is a matter of judgment and selection for the designing engineer, and it is contemplated that such variations may be resorted to as are conformable to good practice. And to facilitate the ascent and increase the volume of fluid up the slope of the funnel member 16 as it is rapidly revolving, some means interiorly thereof is provided which in the present embodiment of my invention is represented as consisting of spirally arranged mechanism comprising angles 18 secured to the inner wall of said member 16 and arranged in an inclined and spiral formation; the outstanding legs of which lift the washing suds during the rotation of the member. This spirally arranged mechanism may extend from the perforations 15 to the lower end of the member 16, or any point adjacent thereto.

The centrifugal clothes container with its appurtenances is revolved by means of a motor 19 supported upon a bracket 19^a which drives a friction gear 20 which in turn drives a friction gear 21 on the revolvable bearing 7 which supports said centrifugal container 14. The motor shaft 22, which supports the gear 20, may extend through a bearing in one of the supporting

legs of the washer casing 4, and a spring 23 may be utilized to keep said gears in firm contact. For this purpose shaft 22 may be made in two parts connected together by a clutch 24 which allows the left hand portion to slide therein. During the drying operation of the machine, some means must be provided to prevent centrifugal flow of the washing fluid, or draw the same off. For this purpose, I illustrate the simplest method, namely draining the holder 1 by means of the drain pipe 25 and the valve 26, thus allowing the centrifugal container to run dry and perform the drying operation.

It is often desirable that the rinsing and bluing of the clothes in the container 14 be accomplished without drawing the washing fluid from the container 1, and to effect this purpose a baffle plate 100 may be removably secured in the funnel member 16 so that when said plate is in position therein fluid from the container 1 is prevented from flowing upwardly therethrough. In order to prevent the flow of the rinsing or bluing fluid from said container 14 into the container 1 through the conduit 6, a three-way valve 102 is provided in said conduit and thus fluid therein may be prevented from flowing into the container 1 and may be drawn outwardly through a suitable spigot or nozzle 101. The baffle plate 100 as shown is provided with a peripheral flange which is adapted to frictionally engage the tapered inner sides of the funnel member 16 and a suitable handle 103 is provided on said plate for inserting and removing the same. If desired, said baffle plate may be secured in the funnel member by a breech block screw lock or other suitable means.

The operation is as follows:

The clothes to be washed are put in the centrifugal container 14 by removing the cover 27 as shown in Figure 9; the washing fluid is put in the receptacle 1 and the motor started to rapidly revolve the container 14; the centrifugal force created by the rapidly revolving funnel member 16 with its spirally arranged plates 18 will draw the washing fluid from the receptacle 1 up to the centrifugal container 14 where it will be dashed through the perforations 15 and against the clothes by centrifugal force; the funnel-shaped member 16 being so designed as to extend well into the container for this purpose. The suds or washing fluid will pass through the clothes and through the apertures 15 in the container and return through the return pipe 6 to the fluid receptacle. If the clothes should be unusually dirty, they may be agitated while in the container to hasten the washing process. When the clothes are sufficiently washed, the suds may be drawn off through the drain pipe 25 by opening the valve 26. Rinsing fluid may next be put into the receptacle 1 and the

clothes rinsed by the same centrifugal action. Thereafter bluing fluid may be substituted for the rinsing fluid and the process repeated, and any other treatment may follow until the clothes are prepared to be dried. When this stage has arrived, the fluid is withdrawn from the receptacle; the rapidly revolving centrifugal container will soon cause the remaining moisture to leave the clothes and dry the same under the high centrifugal speed.

It will accordingly be observed that my invention embodies a new system of washing clothes in which a circulative system of fluid is utilized which may be drawn off to allow the clothes to be immediately dried in the container, and which thus dispenses with the wringer mechanism now so commonly used.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

I claim as my invention:

1. In a washing machine, a fluid holder, a revoluble bearing supported thereon, a clothes container secured to said bearing and revoluble therewith, a funnel-shaped member having a perforated portion in said container and extending through said bearing and into said fluid holder, and means for revolving said bearing and container.

2. In a washing machine, a fluid holding receptacle, a casing supported thereon and communicating therewith, a revoluble and perforated clothes container supported in said casing, a funnel-shaped member extending centrally through said container and entering said receptacle, and means for revolving said member and container to cause the fluid to rise in said member to said container and be dashed through said container.

3. In a washing machine, a fluid holder, a casing supported thereon and communicating therewith, a centrifugal clothes container rotatably supported in said casing, a funnel-shaped member mounted centrally of said container to rotate therewith and extending into said fluid holder, spirally arranged means on the inner walls of said funnel-shaped member, and means to rotate said container.

4. In a washing machine, a rotary perforated clothes container having an elongated vertical bearing member attached thereto, a funnel-shaped member secured in said bearing and having a spraying portion in said container and a portion extending below said bearing, a fluid holder containing the lower end of said member, and means to rotate said bearing member with said funnel-shaped member to draw fluid from said holder by centrifugal force and spray it in said container through said spraying portion.

5. In a washing machine, a washing fluid container, a casing mounted thereon and having a central bearing therein, a centrifugal clothes container in said casing, a hollow cylindrical bearing attached to said clothes container and extending through said central bearing, a bearing box in the upper end of said fluid container for supporting said cylindrical bearing, and a tapering fluid lifting tube supported in said cylindrical bearing and extending from said fluid container into said clothes container and provided with a perforated portion in said clothes container.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

OSCAR H. ELIEL.

Witnesses:

CARLTON HILL,
EARL M. HARDINE.