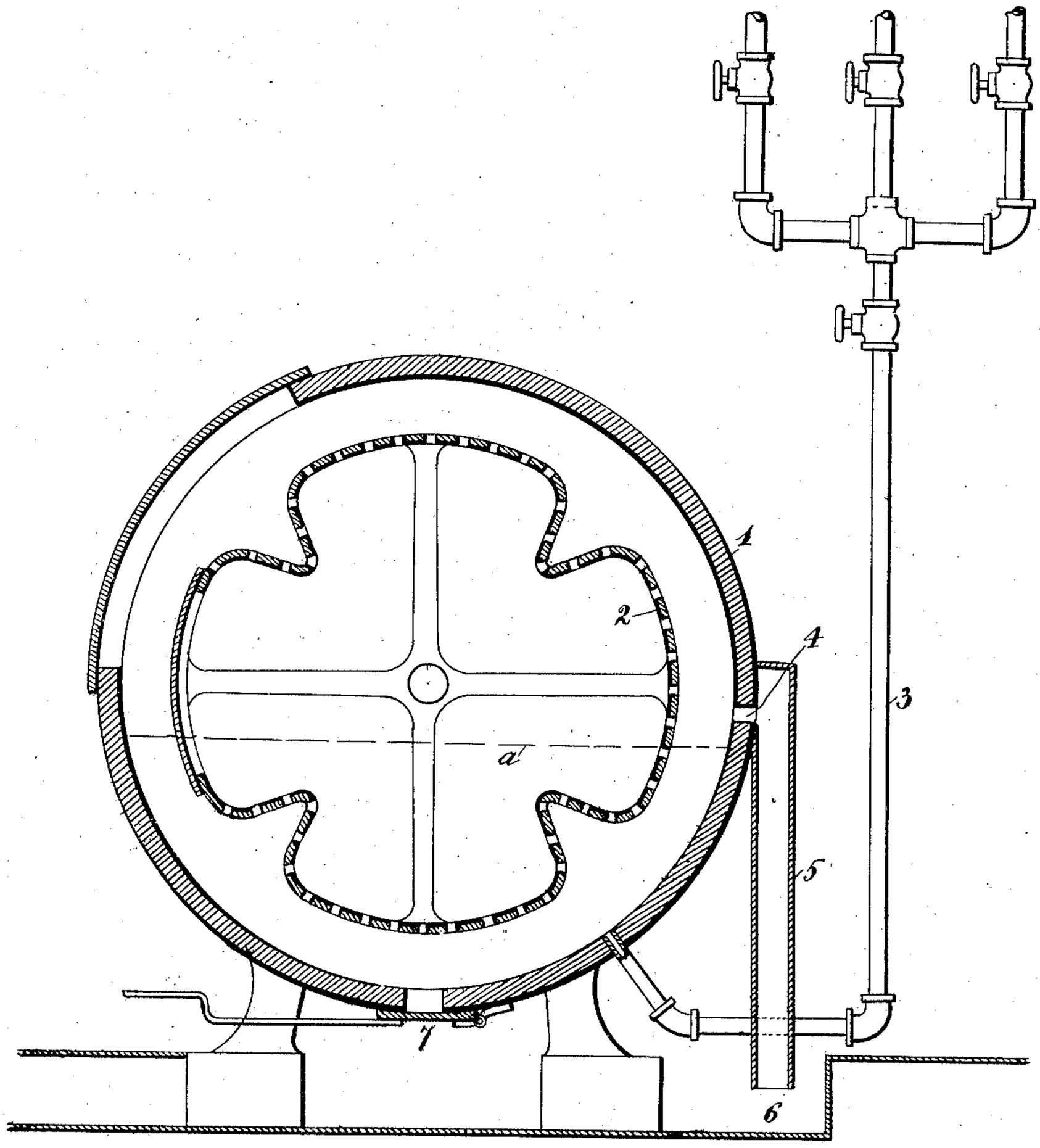
June 5, 1934.

R. P. ELLS

1,961,606

METHOD OF LAUNDERING

Filed April 6, 1932



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Patented June 5, 1934 1,961,606

UNITED STATES PATENT OFFICE

1,961,606

METHOD OF LAUNDERING

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Application April 6, 1932, Serial No. 603,512

4 Claims. (Cl. 68—18)

The invention relates to a new method of washing clothes or fabrics. The object of the invention is to thoroughly cleanse the fabric with as little injury to it as possible and with a minimum of disturbance to the arrangement and integrity of the fibres of which the fabric is composed. Incidental to this, but in no sense as a subordinate factor, a further purpose of the invention is to provide a method of cleansing by which the objective result will be accomplished in less time and at less cost than is possible with pre-existing methods, and this by reducing the number of operations and total time required for completing the washing operation; to use as little detergent material as possible, and as little heat as possible; also to obtain such cleansing of the fabric as will enable the cleansed fabric to become better dried and more quickly ironed than heretofore.

The method is one which can be practiced by washing machines or wheels now in general use with but slight modification, and in the drawing a typical one of these machines is shown in end elevation with proposed water intake and overflow.

Referring to the drawing the machine comprises a stationary outer casing 1 and an inner rotary, perforated, cylinder or cage 2 within which the clothes are placed for washing, and which cylinder is rotated or oscillated in the usual manner. Connecting with the casing 1 at the bottom is a pipe connection 3. Hot or cold water, or steam, may be introduced into the chamber of the cylinder through this pipe which is preferably provided with separate valve controlled branches for introducing hot or cold water, or steam as may be desired. In the back of the casing is an opening 4 providing an overflow from the chamber of the casing into an overflow conduit 5 connecting with a gutter 6 lying below. The opening 4 is preferably arranged within a horizontal plane lying slightly below the axis of the cylinder.

It will be seen that the machine is substantially like those in common use excepting that at a point just below the axial line the opening 4 is made in the outer case of the wheel which will permit the overflow of water from the top of the water level when the water level is raised to this point. Provision is also made whereby water may be admitted to the bottom of the casing by way of the inlet pipe 3 below the clothes placed in the inner container of the wheel.

The present method of operation is as follows:

The clothes are placed in the inner container 2 of the wheel, and water at a preferred temperature of about 100° F. is admitted through the pipe 3 into the chamber of the outer casing 1 until the water therein is of such depth that when the clothes are lifted by the revolving inner container and allowed to drop back they will drop on to water and not on to water-saturated clothes. The water line *a* on the drawing indicates about the normal wash line.

To the contained water is preferably added caustic soda or potash, or a modified soda or potash, sufficient to raise the pH of the water at the end of a five or six-minute run to about 8.5 to 9.5. The alkalinity thus added at the outset is used solely for the purpose of neutralizing the superficial acidity of the clothes, this acidity being the result either of human liquid elements or acidity resulting from a previous washing which acidity if left in would break down the integrity of the soap later to be introduced. The pH noted is much lower than the traditional alkalinity pH urged for laundering processes relying largely on soap to accomplish the desired detergent action.

There is now added to the water or bath a water miscible emulsifying agent capable of easily causing the emulsification of the grease and oils in the clothes. As example of such there may be used organic chlorinated or hydrogenated solvents of the aliphatic series (themselves insoluble in water) made miscible in water to any attenuation through the medium of an aqueous solution of a potash or ammonia soap.

There is, also, added to the water or bath an easily soluble soap capable of producing a profuse and lasting suds, a soda or potash soap of low titre is preferably employed. Agitation of the clothes is continued for about 15–20 minutes. During this period of agitation the dirt released from the emulsified grease and oils will become floated out by the soap solution into the bath and the soap will impart to the dirt particles a colloidal coating and the dirt particles will lie in suspension in the bath in substantial part although some few of the heavier particles will gradually gravitate to the bottom of the casing when freed from the clothes.

The bath with the colloidal coated dirt particles suspended therein is now diluted, by admitting fresh water at the bottom of the casing to pass upwardly through the clothes, raising the level of the water to the level of the overflow opening 4 and allowing the constantly diluted bath to pass out of the casing. The amount of water admitted and the amount of water released should bear such relative proportion that the

level of the bath will be maintained at the outlet height. The entry of water is continued until clear water escapes from the top of the bath. During this period the clothes are kept agitated in the bath and this has the effect of releasing into the bath any dirt that may remain upon or in the clothes. This period of diluting the bath usually takes about 3 minutes but this is largely dependent on the volume of water introduced.

Bleaching is done if desired during the last 10 minutes of the initial run. During the bleach run the temperature of the wheel may be run up to 140° F. to cause the bleach to function. Souring does not have to be resorted to as the alkalinity set up is easily rinsed out as is the soap used.

Blueing is done by dropping the water level at the end of the overflowing rinse and then adding the blue water solution. At the end of 3 to 4 minutes all the water contents are dumped through the bottom dump valve 7.

This completes the operation and the clothes are removed from the washer for drying and ironing in the usual manner.

Thus all the objects sought for are obtained. The fact that the clothes thus treated may be more quickly dried and ironed than with ordinary methods is undoubtedly due to the fact that there is practically no soap or soil left in the clothes. Where soap is left in the clothes, the soap being deliquescent tends to hold moisture and on this account even after passing through the dryer such amount of moisture will remain in the clothes as will prevent a quick ironing.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States:—

1. The method of laundering which includes agitating the goods in a bath containing an emulsifying agent and soap, by lifting the goods out of the bath and allowing them to drop onto the surface of said bath while maintaining said bath at a substantial depth, continuing the agitation until the dirt particles released and colloidal-coated have entered into suspension in the bath, afterwards diluting the bath by the addition of fresh water from a point below the goods, maintaining the bath at a level above the goods and allowing the water to escape from off the top at about the top level of the bath, then continuing the agitation of the goods and the addition of fresh water until the water runs clear from off the top as aforesaid.

2. The method of laundering in a cylinder rotating on a horizontal axis which includes agitating the goods in a bath containing an emulsifying agent and soap, by lifting the goods and allowing them to drop directly onto the surface of the bath, while maintaining the level of said bath at a point slightly below the horizontal axis of the cylinder, continuing the agitation until the dirt particles have entered into suspension in the bath, afterwards diluting the bath by the addition of fresh water from a point below the goods, maintaining the bath at a level above the goods and allowing the water to escape from off the top at about the top level of the bath, then continuing the agitation of the goods and the addition of fresh water until the water runs clear from off the top as aforesaid.

3. The method of laundering in a cylinder machine which includes agitating the goods in a bath containing an emulsifying agent and soap, while maintaining said bath at a depth slightly less than the radius of the cylinder, continuing the agitation until the dirt particles released and colloidal-coated have entered into suspension in the bath, afterwards diluting the bath by the addition of fresh water from a point below the goods, maintaining the bath at a level above the goods and allowing the water to escape from off the top at about the top level of the bath, then continuing the agitation of the goods and the addition of fresh water until the water runs clear from off the top as aforesaid.

4. The method of laundering which includes agitating the goods in an alkaline bath containing an emulsifying agent and soap, and having a pH of about 8.5 to 9.5, continuing the agitation until the dirt particles released and colloidal-coated have entered into suspension in the bath, afterwards diluting the bath by the addition of fresh water from a point below the goods, maintaining the bath at a level above the goods and allowing the water to escape from off the top at about the top level of the bath, then continuing the agitation of the goods and the addition of fresh water until the water runs clear from off the top as aforesaid.

RAY P. ELLS.