Aug. 13, 1929. H. R. MERSELES 1,724,674

WASHING MACHINE

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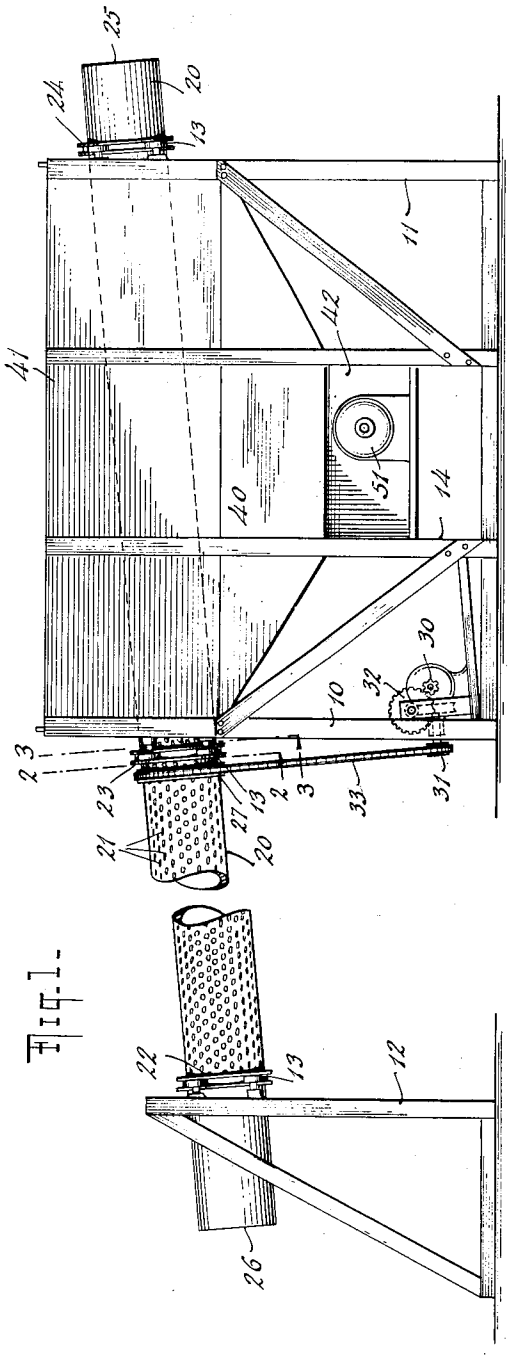


Fig. 1.

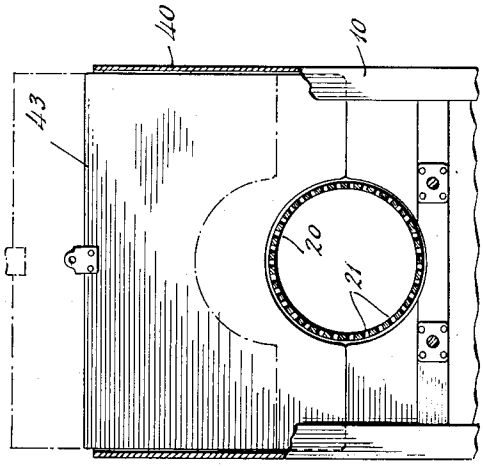


Fig. 3.

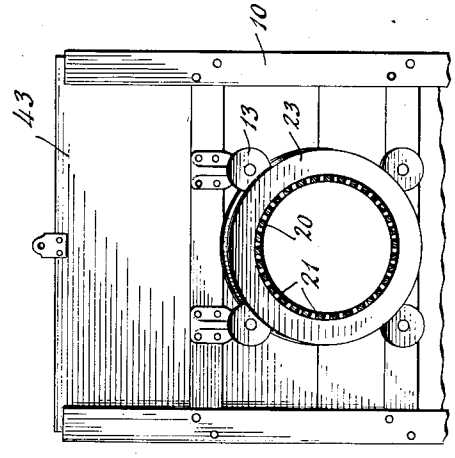


Fig. 2.

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Fig. 4.

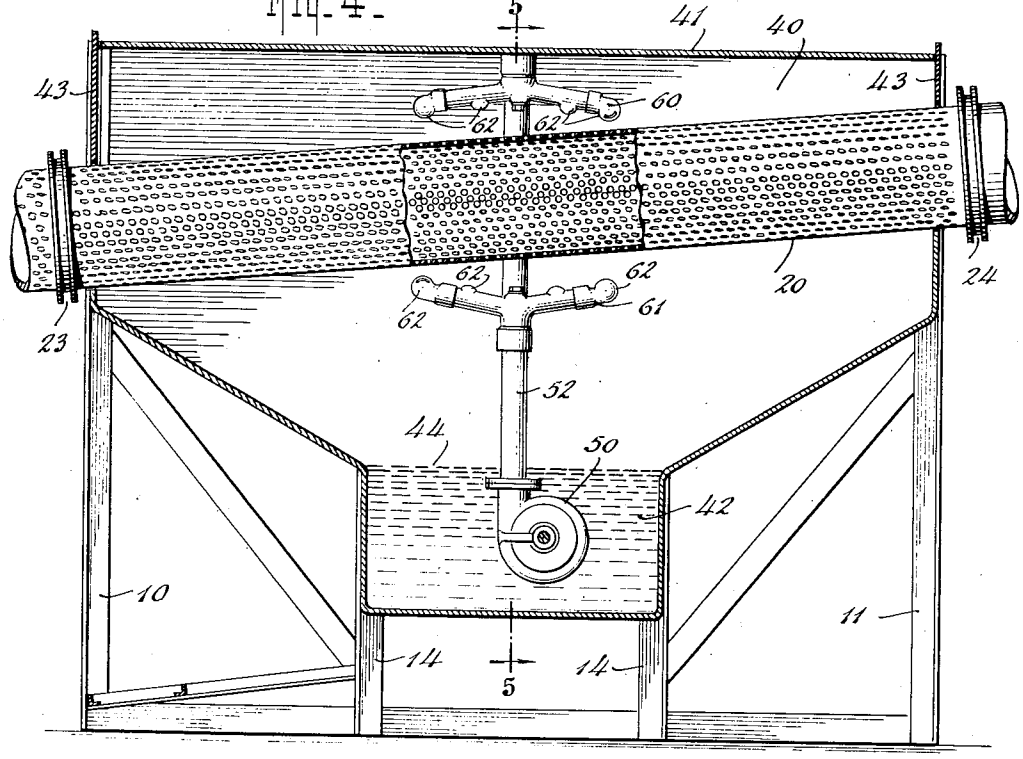
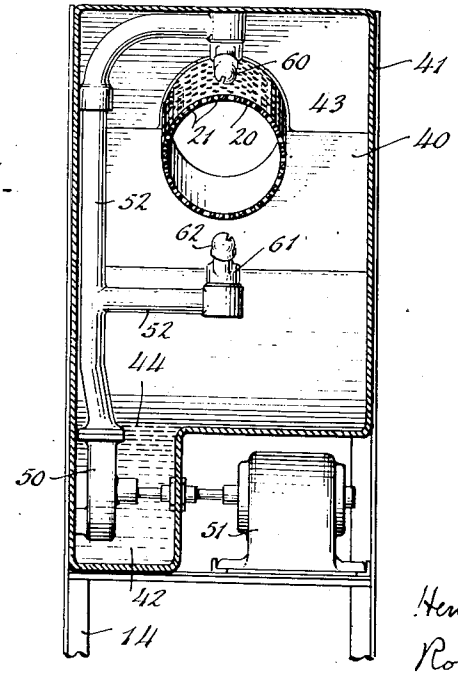


Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY R. MERSELES, OF BRONXVILLE, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HOBART MANUFACTURING COMPANY, OF TROY, OHIO, A CORPORATION OF OHIO.

WASHING MACHINE.

Application filed January 26, 1923. Serial No. 614,960.

This invention relates to washing machines, and aims to provide a machine which, while capable of general use as a washing machine, is particularly adapted to the washing of small metal parts which have a tendency to stick together.

It has heretofore been found extremely difficult to provide for automatic washing of razor blades and hack saw blades, and similar articles, since such parts have a tendency to mass together so that the washing fluid can not easily be brought into contact with all the surfaces of the parts. The present invention eliminates this difficulty and provides also for automatically passing such parts through the machine, and, when desired, for discharging said parts in dried condition.

A washing machine embodying the present invention is provided with a perforated or reticulated cylinder which is inclined at a small angle to the horizontal and rotated so as to cause articles fed into its upper end to tumble about and travel gradually through the cylinder to its lower end. A washing medium is projected into the cylinder through the perforations thereof so as to strike the articles as they are being tumbled about in the cylinder. This washing medium drains out of the cylinder through the perforations and is caught and used again. The cylinder may be extended to such a distance beyond the point at which the washing occurs that the articles may be thoroughly drained before they reach the lower end of the cylinder.

Other features and advantages of the invention are hereinafter pointed out in connection with a detailed description of a specific embodiment of it. A washing machine embodying the invention is shown in the accompanying drawings, in which:—

Fig. 1 is a side elevation of the complete machine, a portion of the cylinder being broken away;

Fig. 2 is a transverse section on the line 2—2 of Fig. 1;

Fig. 3 is a transverse section on the line 3—3 of Fig. 1;

Fig. 4 is a partial side elevation of the machine showing the casing and a portion of the cylinder sectioned on a vertical plane passing through the axis of the cylinder; and

Fig. 5 is a transverse section on the line 5—5 of Fig. 4.

The framework of the machine illustrated includes suitably braced vertical frames 10, 11, 12, upon which a long perforated cylinder 20 is supported. This cylinder may be formed of sheet metal having a large number of perforations 21 formed therein by punching, or otherwise. The cylinder may, if desired, be constructed in other ways, as, for example, of wire mesh. To avoid unnecessary repetition, I shall throughout this application use the expression "perforated cylinder" to designate a hollow cylinder of any construction in which the walls of the cylinder are provided with a plurality of closely spaced openings which I shall term "perforations," regardless of the particular manner in which they are formed.

The cylinder 20 is provided with external collars 22, 23, 24, which are supported and retained in position by rollers 13, four of which are mounted on each of the vertical frames 10, 11 and 12. These rollers are so positioned on the supports that the cylinder 20 is mounted at a slight inclination to the horizontal, the end 25 of the cylinder being higher than the end 26 thereof. The axes of the rollers 13 are parallel to the axis of the cylinder 20, so that the cylinder may be turned freely about its axis.

The cylinder 20 is rotated by means of a motor 30. This motor drives a belt pulley 31 through reducing gearing 32. A belt 33 connects the belt pulley 31 with a belt pulley 27 fixed on the cylinder 20.

A casing 40 surrounds a portion of the cylinder 20. This casing extends between the vertical frames 10 and 11 and is supported by these frames, and a suitable framework 14 between them. The upper portion of the casing 40 forms a hood 41, while the lower portion of the casing provides a tank 42 for the washing fluid. The ends of the hood 41 may be closed by sliding doors 43 which are formed to fit closely about the cylinder 20, leaving sufficient clearance to permit free rotation of the cylinder.

Means are provided for drawing washing fluid from the tank 42 and projecting it into the cylinder 20 through the perforations 21, so that it is brought against the articles which are tumbled about in the cylinder. The projectors for introducing the washing fluid into the cylinder are located in such position that the fluid drains out of the cylinder within the casing 40, and is returned to the tank 42.

In the form illustrated, washing fluid is drawn from the tank 42 by means of a pump 50, which may be submerged in the fluid in the tank, as seen in Fig. 5, and driven by an electric motor 51 located outside the tank. The washing fluid from the pump 50 is conducted through conduits 52 to projectors 60, 61, which direct it into the cylinder through the perforations 21 thereof. In the form illustrated, the projectors 60, 61 are located adjacent to the cylinder at diametrically opposite points. Each of the projectors is mounted so as to be rotatable about a vertical axis intersecting the axis of the cylinder. The projectors are provided with discharge nozzles 62 directed toward the cylinder. Certain of the nozzles of each projector are inclined to the axis of the projector, so that each projector is caused to rotate by the reaction of the washing fluid discharged through its nozzles.

The projectors 61, 62 are located at such distance from the end 43 of the casing 40 that substantially all the washing fluid which they direct into the cylinder drains out of the cylinder within the casing 40 and is returned to the tank 42. It should be noted also that the normal level 44 of the washing fluid in the tank 42 is below the lowest portion of the cylinder within the casing.

In the operation of the washing machine described, the motors 30 and 51 are run continuously. The articles to be washed are fed into the end 25 of the cylinder 20. To obtain the greatest efficiency, the articles should be fed into the cylinder continuously. The articles travel slowly through the cylinder, being tumbled about throughout their travel. As the articles pass through the portion of the cylinder which is between the projectors 60 and 61 they are thoroughly washed by the washing fluid directed into the cylinder by the projectors. The tumbling motion of the articles, combined with the rotary motion of the projectors, has been found to result in directing the washing fluid against all the surfaces of the articles, so that they are very thoroughly washed. The washing fluid thrown into the cylinder from the projectors drains out of the portion of the cylinder between the projectors and the end 43 of the casing The tumbling of the articles in this portion of the cylinder serves to knock from them any drops of the fluid which might otherwise tend to adhere to them, so that the draining out of the fluid is complete.

The portion of the cylinder between the casing 40 and the lower end 26 of the cylinder may be made of such length that the articles are thoroughly drained by the time they reach the end 26 of the cylinder, where they are continuously discharged. The tumbling about of the articles and the free circulation of air permitted by the perforations on the cylinder facilitate the drying of the articles.

It will be understood that the operation of the washing machine is in no way dependent upon the particular washing fluid used in it, nor upon the particular action which this fluid may have upon the articles. The term "washing fluid" should, therefore, be understood to include fluids which may have any desired chemical effect upon the articles as well as fluids adapted merely to remove dirt from the articles.

As I am aware that various changes may be made in the washing machine which has been described without departing from my invention, I wish it clearly understood that the invention is not limited to the particular form and arrangement of the parts illustrated and described except in so far as may be specified in the claims which follow.

What is claimed is:

1. A washing machine, comprising a perforated cylinder adapted to have articles fed into one end thereof to tumble about and move gradually through the cylinder to its other end, means for rotating said cylinder, a hollow projector mounted independently of the cylinder and provided with nozzles located under the cylinder, and positioned to direct washing fluid up into the cylinder through the perforations thereof and directly against articles lying on the lower side of the cylinder, and means for continuously forcing a washing liquid through said projector into the cylinder.

2. A washing machine, comprising a perforated cylinder adapted to have articles fed into one end thereof to tumble about and move gradually through the cylinder to its other end, means for rotating said cylinder, a hollow projector rotatably mounted independently of the cylinder, the axis of rotation of said projector passing through the cylinder at an angle to the axis of the cylinder, said projector being provided with a plurality of discharge openings located close to the cylinder and positioned to direct washing fluid into the cylinder through the perforations thereof, and means for continuously forcing washing fluid through said projector into the cylinder.

3. A washing machine, comprising a perforated cylinder adapted to have articles fed into one end thereof to tumble about and move gradually through the cylinder to its

other end, means for rotating said cylinder, a pair of hollow projectors rotatably and independently mounted at opposite sides of the cylinder intersecting the axis of the cylinder, said projectors being provided with discharge nozzles adjacent to the cylinder and adapted to direct washing fluid into the cylinder through the perforations thereof, and means for continuously forcing washing fluid through said nozzles into the cylinder.

In testimony whereof I have hereunto set my hand.

HENRY R. MERSELES.

CERTIFICATE OF CORRECTION.

Patent No. 1,724,674. Granted August 13, 1929, to

HENRY R. MERSELES.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, line 4, claim 3, after the word "cylinder" insert the words "the axes of rotation of the projectors being coincident and"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of December, A. D. 1929.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)