J. G. STEENSON.

WASHING MACHINE.

APPLICATION FILED OCT. 6, 1910.

999,130. Patented July 25, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

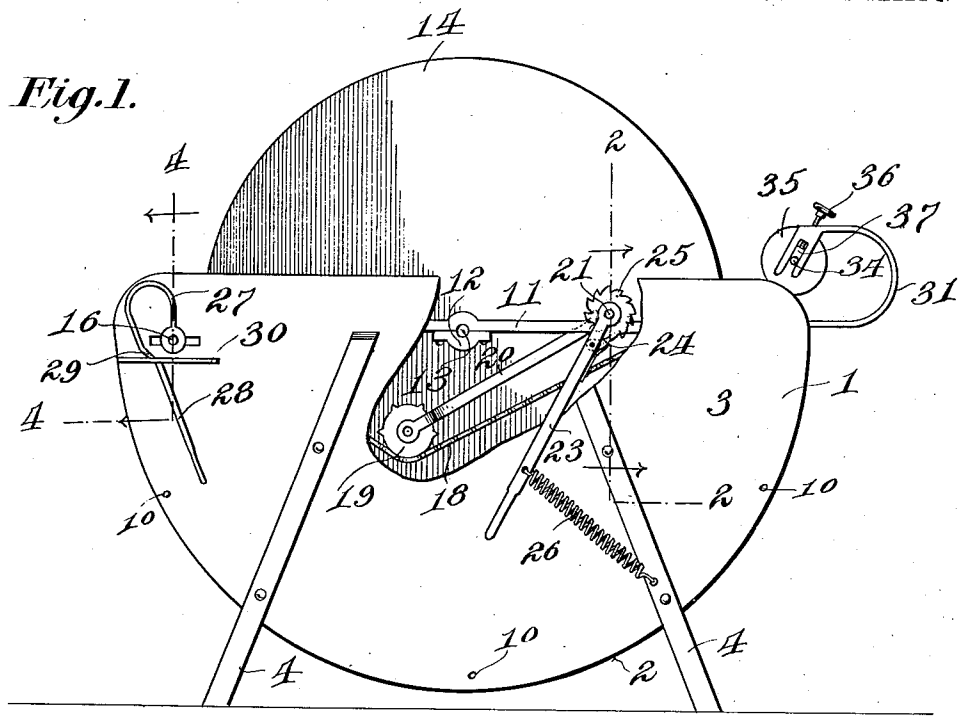
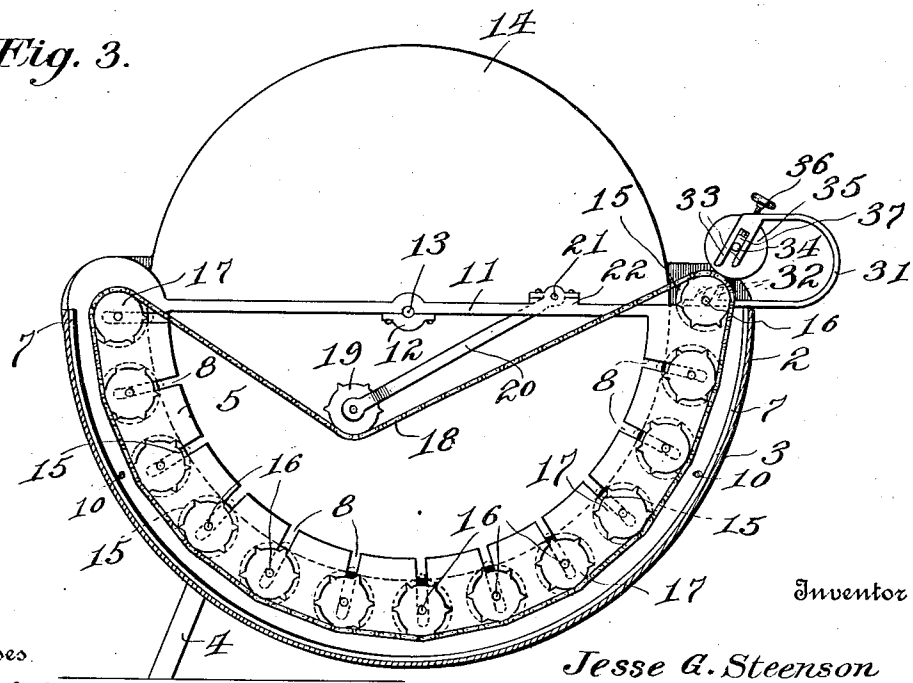


Fig. 3.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 5.

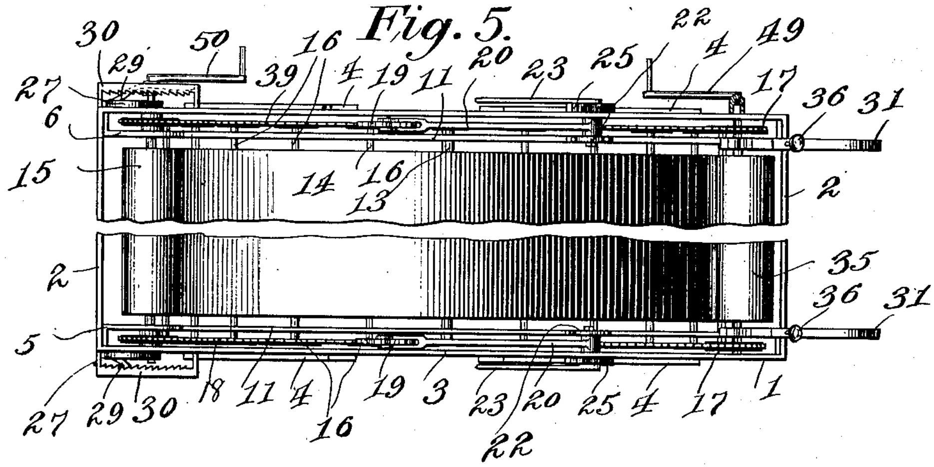


Fig. 2.

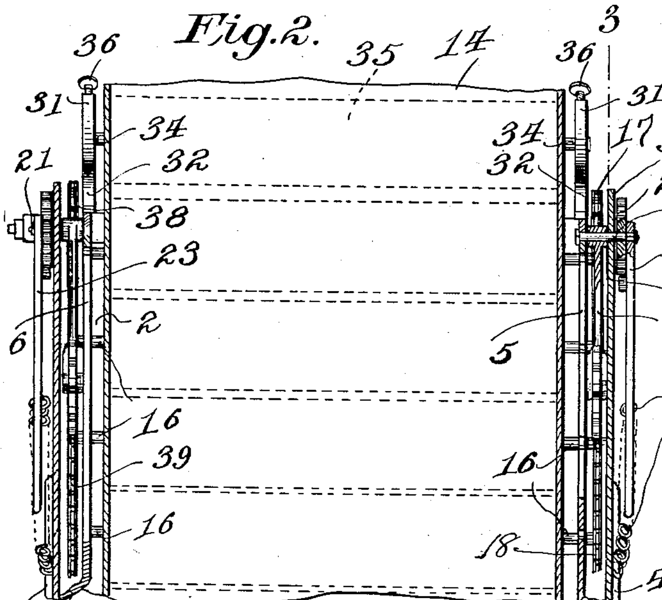
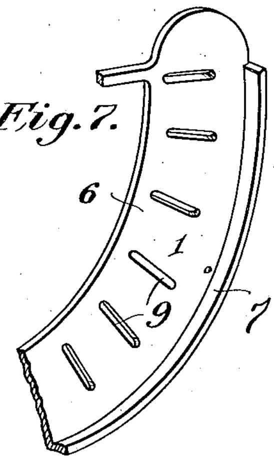


Fig. 7.



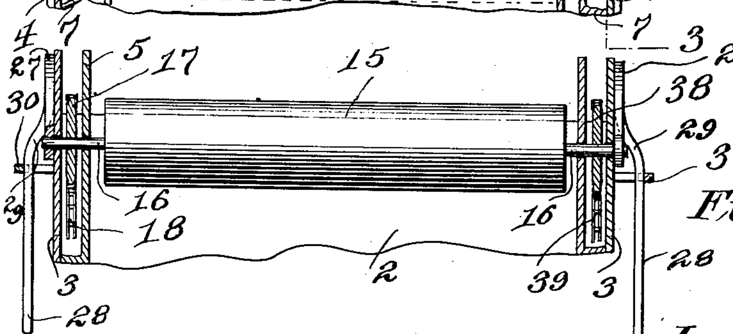


Fig. 4.

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3 SHEETS—SHEET 3.

Fig. 6.

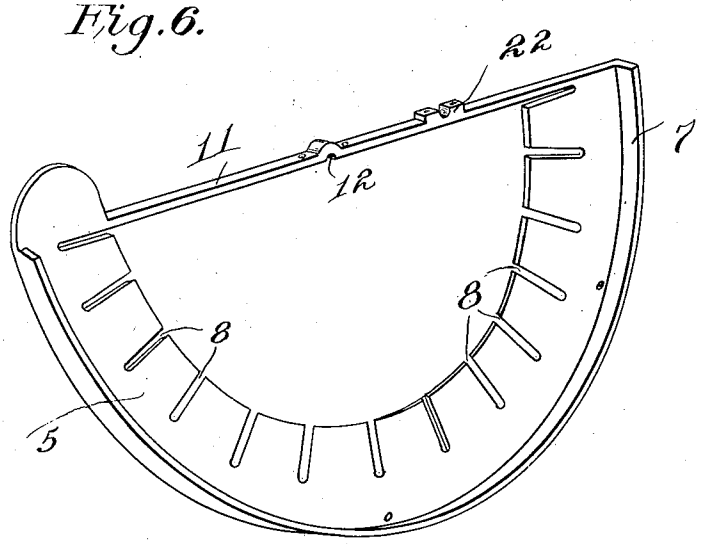
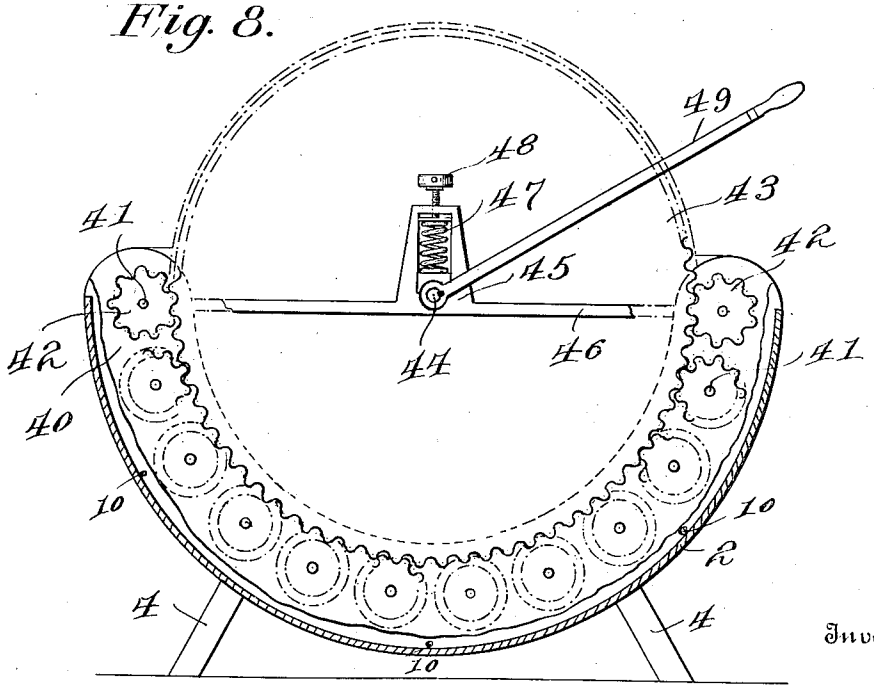


Fig. 8.



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UNITED STATES PATENT OFFICE.

JESSE G. STEENSON, OF MINNEAPOLIS, MINNESOTA.

WASHING-MACHINE.

999,130. Specification of Letters Patent. Patented July 25, 1911.

Application filed October 6, 1910. Serial No. 585,659.

To all whom it may concern:

Be it known that I, JESSE G. STEENSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented new and useful Improvements in Washing-Machines, of which the following is a specification.

This invention relates to washing machines and the object of the invention is to provide a simple, efficient and durable machine by which washing may be readily and expeditiously accomplished.

A further object of the invention is the provision of a combined washing machine and wringer wherein the clothes to be treated are carried around a drum and acted upon by a plurality of rolls together with means for operating upon the last one of the series to adjustably force it into engagement with the drum whereby predetermined wringing pressure may be brought to bear upon the garment.

A still further object of the invention is the provision of a washing machine of this type which may have its mechanism readily removed from the tub and further means whereby the rollers may be readily disconnected from their frames.

Further objects of the invention will appear as the following specific description is read in connection with the accompanying drawing which forms a part of this application, and in which:

Figure 1 is a side elevation with parts broken away. Fig. 2 is a vertical transverse section on the line 2—2 of Fig. 1. Fig. 3 is a vertical longitudinal section taken on the line 3—3 of Fig. 2. Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 1. Fig. 5 is a top plan view of the machine with parts broken away. Fig. 6 is a detail perspective view of one of the side frames. Fig. 7 is a similar view of the opposite side frame. Fig. 8 is a detail sectional view of a modified form.

Referring more particularly to the drawing 1 represents a tub which comprises a semi-cylindrical sheet of non-corrodible metal 2 such as galvanized sheet iron or the like which has its edges connected together by the side pieces 3. This tub is supported upon suitable legs 4 and is adapted to removably receive the washing mechanism hereinafter described. Mounted within the tub adjacent either side thereof are the semi-circular supporting frames 5 and 6 both having lateral peripheral flanges 7 and a plurality of radial slots 8 and 9 in their bodies. The slots 8 are open at their ends while the slots 9 are closed. The purpose of this will be more fully explained hereinafter. These frames are connected together in spaced relation by cross rods 10 and the upper end of each frame is provided with a cross brace or support 11 to which are secured centrally of their length bearing brackets 12 in which are mounted the stub shafts 13 of the washing cylinder 14. This cylinder is preferably composed of a cylindrical air-tight drum constructed of some suitable non-corrodible metal and when in place forms an outline parallel to the bottom 2 of the tub.

Mounted between the frame pieces are a plurality of rollers 15 preferably constructed of wood and having projecting from their ends the stub shafts 16 which are adapted to play up and down in the slots 8 and 9. Upon one side of each roller there is secured to the stub shaft thereof a sprocket gear 17 and all of the sprocket gears on the series of rollers are driven by an endless chain belt 18. The flanges 7 on the side members space the body 5 and 6 of the frames from the side walls of the tub and the sprocket wheel 17 and chain 18 lie in the space formed between the frames and the sides of the tub, the rollers proper being separated therefrom by the body of the frames. The chain which drives the rollers is provided with a tightener in the form of a sprocket wheel 19 which meshes with its upper stretch and is carried upon an arm 20 pivotally mounted upon the shaft 21 journaled in a bracket 22 on the cross bar 11. The opposite end of the shaft 21 has loosely mounted thereon an arm 23 which is provided with a pawl 24 adapted to engage a ratchet wheel 25 keyed upon the shaft 21. This pawl is normally held in engagement with the ratchet so as to turn the shaft 21 and depress the arm 20 by means of a spring 26 which is connected between the arm 23 and one of the legs 4 on the tub. When clothes are passed between the rollers and the drum they are forced away from the drum, their pintles sliding in the slots 8 and 9, of the frame members, and as a consequence the upper stretch of the chain 18 is tightened and the arm 20 raised which carries with it the shaft 21 and the ratchet wheel 25. As the pawl 24 is constantly in engagement with the ratchet wheel the arm

23 is also elevated against the tension of the spring. The roller 15 which is at the beginning of the series and between which and the cylinder the clothes are started, is shown in Fig. 3 as elevated above the edge of the tub and separated from the cylinder, while the roller at the end of the series is held in adjustable engagement with the cylinder by means of bow-shaped springs 27. The springs are connected at one end to the pintles of this roller and at their opposite ends removably connected to levers 28 which are mounted upon the tub and have a lateral extension 29 to bring the same into engagement with the rack bars 30 which are secured to the tub so that the levers may be held in adjusted position, having sufficient inherent resiliency to permit them to be sprung out of engagement with the rack bars when necessary to loosen the tension of the springs or to increase the same.

At the opposite end of the machine the first roller is shown slightly separated from the drum 14 and its pintles 16 slightly raised above the edge of the tub so as to permit the insertion of the lower leg of a horseshoe spring 31. Suitably spaced lugs 32 hold the spring in position upon the pintles and the upper leg is provided with similar or somewhat longer lugs 33 in which is adapted to play the extended pintles 34 of the mangle rollers 35. The tension of the spring is adjusted by means of a set screw 36 which is threaded into the upper leg of the spring and bears upon a wear shoe 37 which rests upon the pintles. The opposite side of the machine is provided with a similar spring so as to equalize the pressure and cause the roller 35 to remain parallel with the end roller 15.

The opposite sides of the rollers 15 from that upon which the sprocket wheels 17 are mounted have sprocket gear 38 mounted upon the roller pintles and connected by a chain 39 which is tightened in a similar manner to that described of the chain 18. The pressure at both ends of the rollers is thus equalized and when forced away from the drum 14 will move in parallel relation with the periphery of the drum.

In Fig. 8 the side frames 40 are shown as flat pieces of semi-circular outline having apertures 41 therein to receive the pintles of the rollers 42. These rollers in this instance are corrugated and mesh with similar corrugations upon the drum 43 and an operating shaft 44 is centrally connected to the drum and slidably mounted in a bearing 45 mounted upon a cross brace 46. A suitable spring 47 normally holds the drum in engagement with the rollers and a set screw 48 is arranged for increasing the tension thereof. In this instance the wringer roller would operate against the next adjacent wooden roller and the spring 27 will be arranged horizontally instead of vertically as shown.

The last roller of the series is preferably made smooth for the wringer roll to bear against. A lever 49 is secured directly to the shaft 44 so that the drum may be reciprocated in a rotary direction. One of the rolls 42 may have a toothed gear thereon and the machine operated by power if desired.

In the operation of the device, the clothes are started in between the first roller and the drum and are carried around past the series of rollers and lie against the face of the drum. They may be passed through this operation as many times as is found to be necessary to readily cleanse the same. As they pass from roller to roller the water is squeezed out of them and allowed to saturate the garment between the rollers. This causes an alternate filling and expulsion of the garment with water which thoroughly cleanses the same. By the tightening mechanism shown, any predetermined pressures may be brought to bear upon the garment treated and as any predetermined pressure may be brought to bear upon the wringer roller when the garment is finally washed, it comes out of the machine comparatively dry. The mangle attachment may be used when necessary and is preferably used independent of the washing machine, the chains being disconnected from the sprocket wheels and rollers and the spring applied in the manner shown. Suitable cranks 49 and 50 are provided at each end of the machine for operating either the entire machine or the wringer or mangle independently. These cranks have a clutch connection with the rollers so that they may be disconnected from opposite engagement with the rollers and yet be in position to be operated when necessary.

Having thus described the invention, what is claimed is—

1. In a device of the class described, the combination with a tub, of a frame removably mounted therein, a washing cylinder carried by the frame, a plurality of washing rollers adjustably mounted in the frame, means to simultaneously rotate said rollers and means engaging said rotating means to hold the rollers in engagement with the drum.

2. In a device of the class described, the combination with a tub, of separated frames removably mounted therein, means for connecting the frames together, a washing cylinder rotatably mounted in the frames, a plurality of washing rollers adjustably mounted in the frames, means to simultaneously drive all of said rollers, and means engaging said rotating means to hold the rollers in resilient engagement with the cylinder.

3. In a device of the class described, the

combination with a tub, of a pair of slotted frames connected together and removably mounted in the tub, a support carried by each of said frames, a washing cylinder mounted in said supports, a plurality of washing rollers adjustably mounted in the slots in said frames and having sprocket wheels mounted thereon, a sprocket chain interconnecting all of said rollers and adapted to simultaneously drive the same in one direction, and resilient means for tightening said chain whereby the rollers are flexibly held in engagement with the washing cylinder.

4. In a device of the class described, the combination with a tub, of a pair of slotted frames connected together and removably mounted in the tub, a support carried by each of said frames, a washing cylinder mounted in said supports, a plurality of washing rollers adjustably mounted in the slots in said frames and having sprocket wheels mounted thereon, a sprocket chain interconnecting all of said rollers and adapted to simultaneously drive the same in one direction, an adjustable tension roller for engaging said chain, and a spring retracted operating member for said tension roller.

5. In a device of the class described, the combination with a tub, of a frame removably mounted therein, a washing cylinder journaled in the frame, a plurality of washing rollers held in resilient engagement with the washing cylinder, means to simultaneously drive said rollers and thereby the cylinder, means to hold the rollers in resilient engagement with the cylinder and means to independently adjust the pressure of one of said rollers against the cylinder for the purpose described.

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

JESSE G. STEENSON.

Witnesses:

SAMUEL STEENSON, Jr.,

A. O. CORNWELL.