A. C. KENWORTHY.

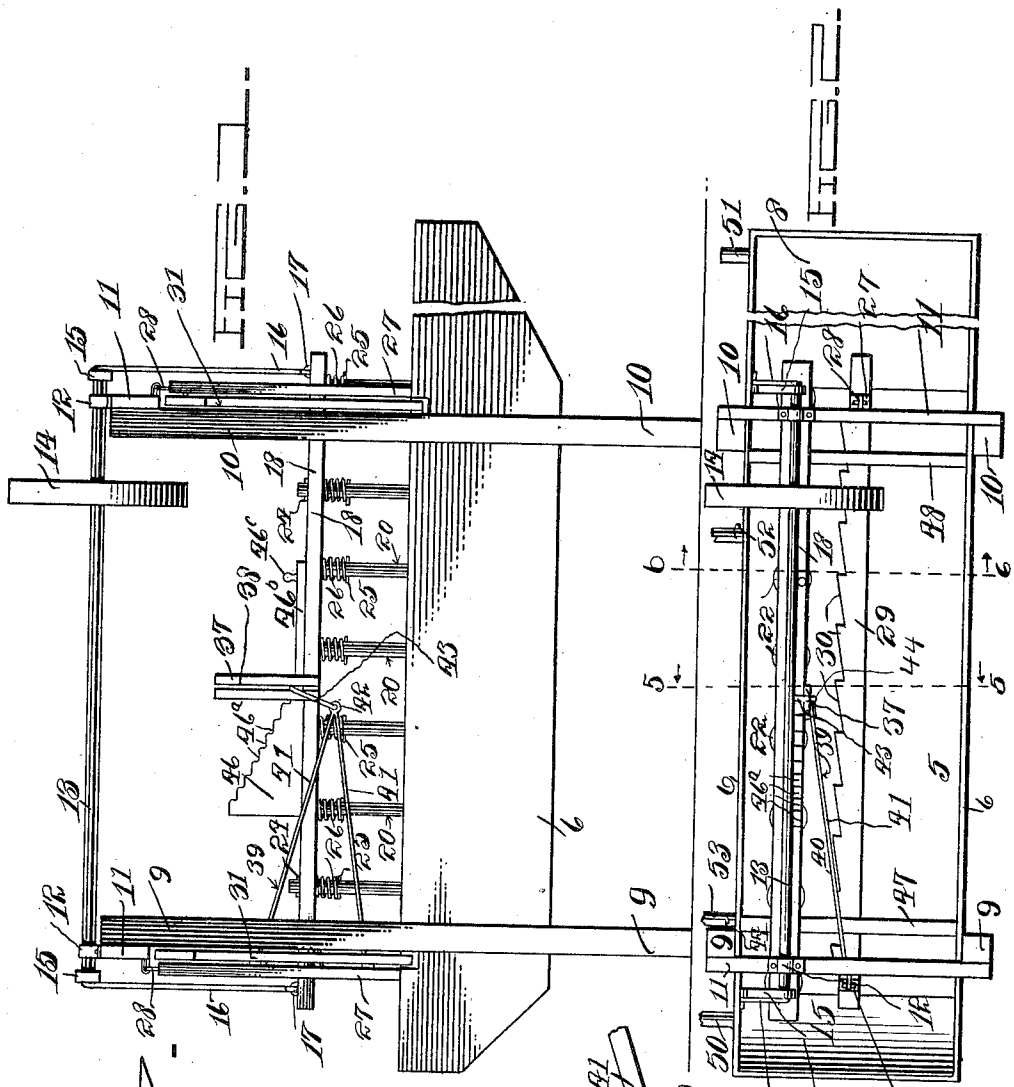
WASHING MACHINE.

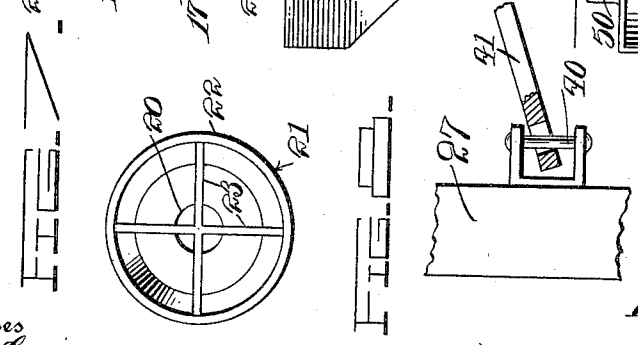
APPLICATION FILED FEB. 3, 1912.

1,067,176.

Patented July 8, 1913.

3 SHEETS—SHEET 1.





Witnesses

W. W. Saylor.

George Sale.

Inventor

A. C. Kenworthy.

By Cushman & Cushman

Attorneys

A. C. KENWORTHY.

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3 SHEETS—SHEET 2.

FIG. 4.

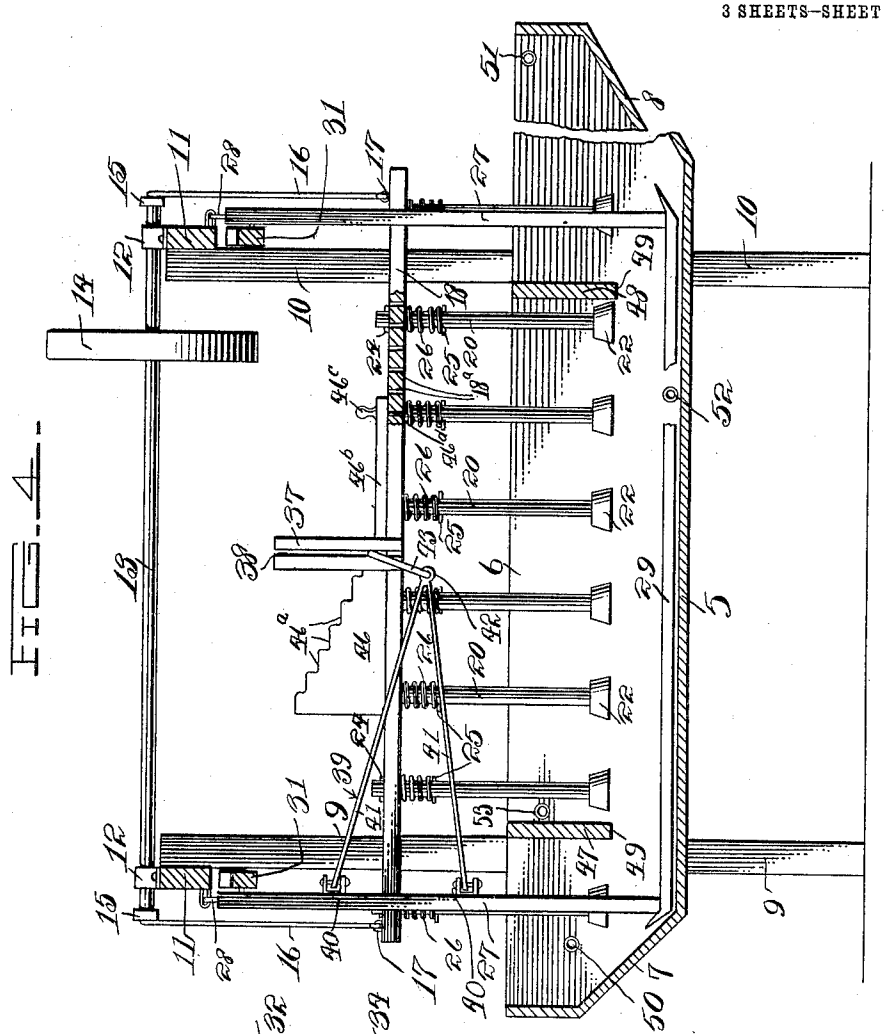
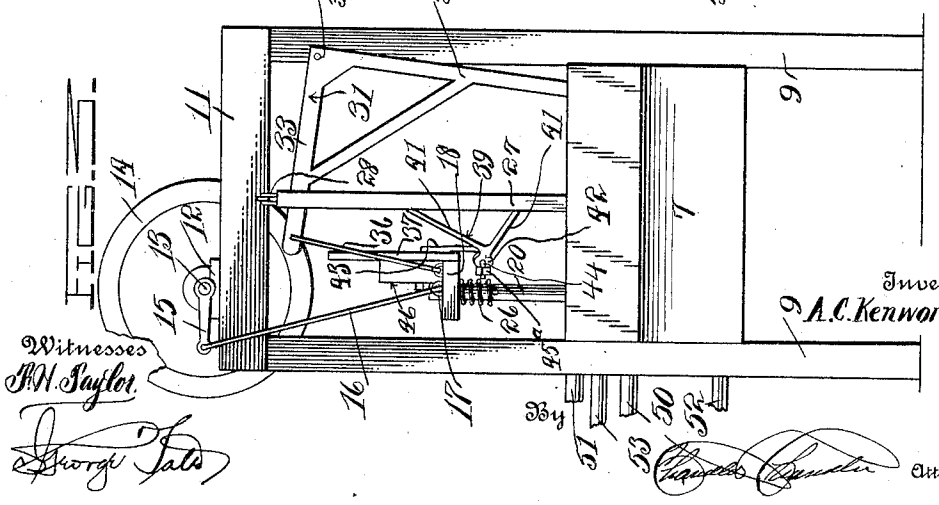


FIG. 5.



Witnesses
P. W. Taylor.
George Yates

Inventor
A. C. Kenworthy.
By
Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

A. C. KENWORTHY.

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3 SHEETS—SHEET 3.

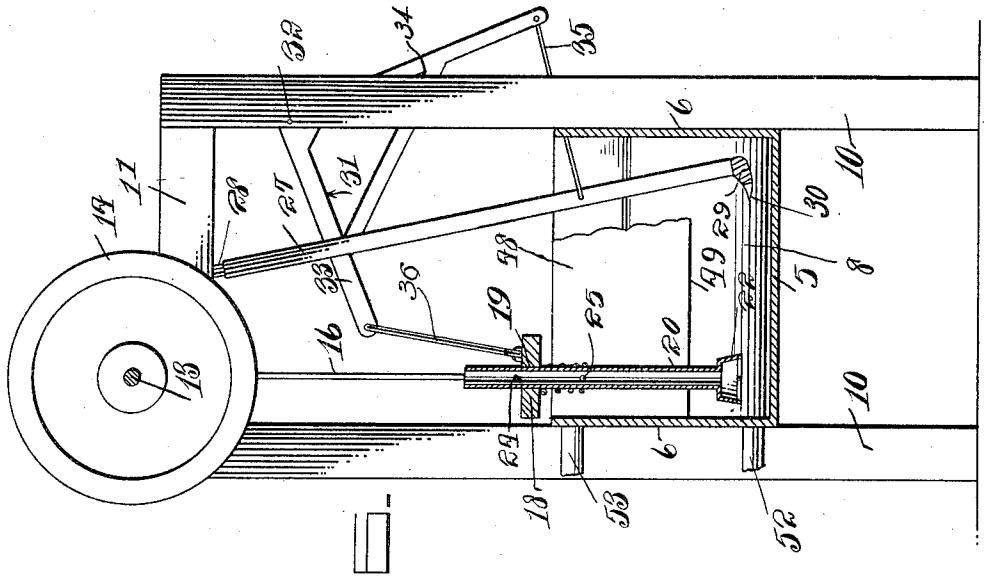


FIG. 6.

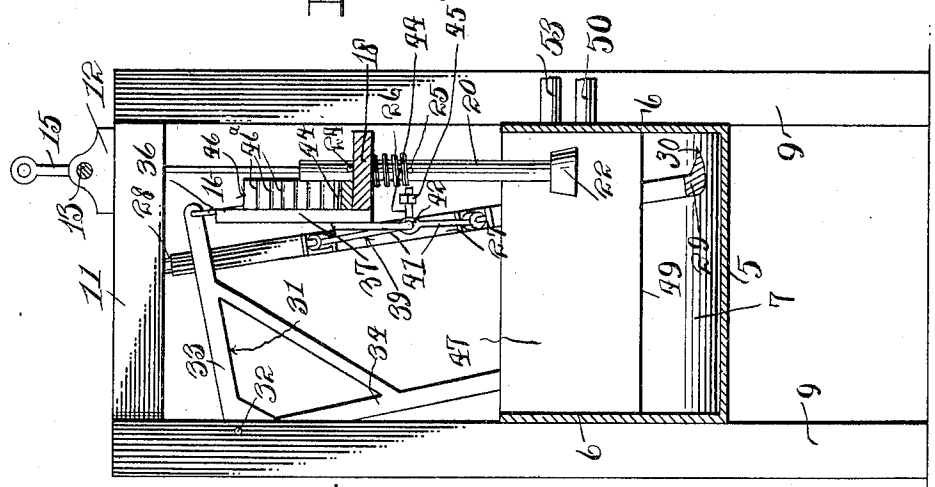


FIG. 5.

Witnesses

P. W. Taylor

George Tate

Inventor

A. C. Kenworthy.

By Munn & Co

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALVIN C. KENWORTHY, OF HUNTSVILLE, WASHINGTON.

WASHING-MACHINE.

1,067,176. Specification of Letters Patent. Patented July 8, 1913.

Application filed February 3, 1912. Serial No. 675,103.

To all whom it may concern:

Be it known that I, ALVIN C. KENWORTHY, a citizen of the United States, residing at Huntsville, in the county of Columbia, State of Washington, have invented certain new and useful Improvements in Washing-Machines; 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.

This invention relates to improvements in washing machines, and particularly to that type commonly known as the pounder type.

The principal object of the invention is to provide a washing machine in which a novel means is employed for alternately pounding the clothes and simultaneously rotating the clothes and shifting them longitudinally under the pounders, whereby the clothes will be acted upon in different places successively.

Another object of the invention is to provide a washing machine of the character described which includes a body having cold and hot water inlet pipes disposed in spaced relation, so as to permit the clothes to be successively washed and rinsed.

A further object of the invention is to provide a washing machine body of the character described having a steam inlet pipe connected to the bottom thereof to permit of the steam acting upon the clothes as they are turned and moved longitudinally under the pounders.

A still further object of the invention is to provide a washing machine of the character described, which is provided with means adapted for connection with a motor or the like.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings: Figure 1 is a side elevation of a washing machine constructed in accordance with my invention, Fig. 2 is a top plan view of the machine, Fig. 3 is an end view thereof, Fig. 4 is a longitudinal sectional view through such a machine, parts thereof being shown in elevation, Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 2 in the direction indicated by the arrows, the pounders and agitator bar being shown in one extreme position, Fig. 6 is a transverse sectional view taken on the line 6—6 of Fig. 2 in the direction indicated by the arrows, the pounders and agitator bar being shown in the other extreme position, Fig. 7 is a bottom plan view of one of the pounders, and Fig. 8 is an enlarged detail view partly in section of one of the pivot connections.

Like reference numerals designate corresponding parts in all the figures of the drawings.

Referring to the drawings, the invention comprises a body consisting of a bottom 5, sides 6—6, inclined front and rear ends 7 and 8 respectively. This body is supported at its front end by a pair of standards 9—9 and at its rear end by a pair of standards 10—10. These standards respectively extend above and below the body, and each pair of standards is connected at its upper ends by a cross bar 11.

Mounted upon each cross bar 11 at one side of the center thereof is a bearing 12 and journaled in said bearing is a longitudinal shaft 13, whereon is fixedly mounted by any suitable means a pulley 14, said pulley being preferably formed of metal to constitute a resultant fly-wheel. The ends of the shaft 13 project beyond the bearings 12, and crank arms 15—15 are respectively connected thereto. Connected to the free end of each crank arm is one end of a pitman 16, and the lower end of the pitman is pivotally connected, as at 17, to the opposite ends of a longitudinally disposed supporting bar 18. Formed in this bar is a plurality of spaced vertical openings 19, and mounted in each of these openings for vertical sliding movement is the upper end of a hollow stem of a pounder 20, the lower end terminating in an inverted funnel-shaped head 22. Mounted within each head 22 is a pair of cross bars 23—23 which prevent the clothes from being caught within the head as will be hereinafter explained. Cross pins 24 and 25 are respectively connected to each stem above and below the supporting bar 18 and in spaced relation thereto. A coil spring 26 is disposed around each stem intermediate the supporting bar

18 and the lower cross pin 25 for normally urging the heads downward and at the same time absorbing any shock incidental to the heads engaging with the clothes. It will thus be observed that from rotation of the shaft 13, the supporting bar 18 and consequently the pounders 20, will be oscillated in a vertical plane. It is to be observed that the heads 22 of the pounders are normally disposed above and in spaced relation to the bottom of the body.

My invention further comprises a novel mechanism for simultaneously turning the clothes and directing them longitudinally when the pounders 20 are in their elevated positions. This mechanism comprises a pair of arms 27—27 which are each pivotally connected, as at 28, centrally of a respective cross bar 11 to permit of a lateral swinging movement and also a slight longitudinal movement with respect to the body of the machine. These arms extend downwardly within the body and terminate at their lower ends in spaced relation to the bottom 5 thereof. The lower ends of these arms are connected by an agitator bar 29, and the face of this bar adjacent the pounders 20 is formed with a series of rearwardly projecting teeth 30. A bell-crank lever 31 is pivoted at its angle, as indicated at 32, to the upper end of a respective standard on the side of the arm 27 opposite the supporting bar 18. Each bell-crank lever includes a horizontal arm 33 and a vertical arm 34. Links 35 are each pivotally connected at one end to the lower end of a vertical arm 34, and at its other end to the adjacent arm 27 at a point intermediate its ends. Links 36 are each pivotally connected at one end to the free end of a horizontal arm 33, and at the other end to the supporting bar 18. It will thus be observed that when the pounders 20 are disposed in their lowermost position within the body, the agitator bar 29 will be disposed against the opposite side of said body, and that when the pounders are elevated by the mechanism above described, the links 36 will act upon the bell-crank levers 31, and these levers will through the links 35 cause the arms 27 to swing the agitator bar 29 under the heads 22 of the pounders. Upon the downward movement of these pounders the agitator bar 29 will be returned to its normal position, as will be readily understood.

My invention further comprises a mechanism for longitudinally oscillating the agitator bar 29. In order to accomplish this movement of the agitator bar, there is centrally mounted upon the supporting bar 18, an upright 37 which is formed with a vertical slot 38. A V-shaped frame 39 has the free ends of its arms 41—41 pivotally connected, as at 40—40, to one of the swinging arms 27 and the apex of this frame is provided with an eye 42. A U-shaped link 43 has one of its legs 44—44 disposed within the slot 38, while the other leg 45 projects through the eye 42 of the frame 39, and associated with the free ends of said legs are nuts 45^a—45^a by means of which the link is held against displacement. It will thus be seen that upon upward movement of the supporting bar 18, said bar will engage the leg 44 of the link 43, and as a result, will through the medium of the frame 39 shift the agitator bar 29 longitudinally of the body 7. Upon the return or downward movement of the supporting bar 18, the arms 27 and consequently the agitator bar 29 will return to their normal positions by gravity. In order to adjust the longitudinal movement of the agitator bar 29, there is slidably mounted upon the supporting bar 18 a triangular block 46 which is formed with a plurality of steps 46^a. Projecting forwardly from this block is a foot 46^b which carries a finger-piece 46^c and a downwardly projecting pin 46^d, said pin being adapted to be inserted in any one of the spaced openings 18^a formed in the supporting bar 18. It will thus be seen that this block may be adjusted longitudinally of the supporting bar 18, and as a result, the leg 44 of the link 43 may be caused to engage any one of the steps 46^a, and thereby limit the longitudinal movement of the agitator bar 29.

Transverse front and rear partitions 47 and 48 respectively are connected to the sides 6 of the body. These partitions are preferably disposed within each outer pair of pounders 20, and have their lower edges 49 normally disposed in substantially the same plane as the lower edges of the heads 22 when said heads are in their normal positions. A cold water inlet pipe 50 communicates with the interior of the body in advance of the pounders. A hot water inlet pipe 51 communicates with the body in rear of the pounders, and a steam inlet pipe 52 centrally communicates with the body at a point below the plane of the agitator bar 29. An overflow pipe 53 communicates with the body at a point above the plane of the cold water inlet pipe 50 and between the transverse partitions 47 and 48, and preferably in close proximity to the former.

In operation, clothes to be washed are inserted into the body from the front end thereof. As these clothes pass down the inclined front end 7, cold water coming from the pipe 50 contacts therewith. The clothes are then engaged by the first pounder, and upon the application of more clothes, the first mentioned clothes are forced under the next pounder, and are subsequently engaged by the agitator bar 29. It will be observed that when a sufficient amount of

clothes has been placed within the body, and after the pounders have performed their operation and have been elevated, the agitator bar 29 will, by the mechanism above described, engage and slightly revolve said clothes transversely of the body of the machine. Simultaneously with this movement of the agitator bar 29, the said bar will be given a slight longitudinal movement toward the rear end of the machine, and as a result, the teeth 30 of said bar will cause the clothes to be shifted longitudinally in the general direction of the rear end of the body. As a result, it will be observed that the clothes will not only be intermittently turned transversely of the body, but will be shifted longitudinally of said body to be successively engaged by the pounders. It is to be also noted that the front partition 47 and the clothes which are disposed adjacent thereto tend to form a dam and thereby tend to prevent the hot and cold water from mixing to any great extent. It will thus be seen that, owing to the fact that the body will be obstructed by clothes adjacent the front partition 47, the cold water will tend to discharge through the overflow pipe 53. As the clothes travel along the body, they will be brought under the rear transverse partition 48 from whence they will be projected into the rear end of the body and rinsed with the hot water at that end.

What is claimed is:

1. In a washing machine, a clothes pounding mechanism, and means connected to said mechanism to rotate said clothes transversely of the machine and simultaneously impart a slight longitudinal movement thereto.

2. In a washing machine, a body, a drive shaft supported longitudinally thereabove, crank arms connected to said shaft, a longitudinally disposed supporting bar, pitmen pivoted to the crank arms and to the supporting bar, a plurality of spaced pounders supported by the bar, and means connected to said bar to rotate the clothes alternately with the movement of said pounders and simultaneously shift the clothes longitudinally of said body.

3. In a washing machine, the combination with a frame, of a body supported thereon, a clothes pounding mechanism including a supporting bar supported by said frame, a driving shaft supported by the frame above the body, the clothes pounding mechanism being operatively connected to said shaft, an agitator bar disposed within the body and supported by the frame for swinging movements, and means connected to the pounding mechanism and supporting bar and swinging the agitator bar under the pounder mechanism.

4. In a washing machine, a clothes pounding mechanism, means connected to said mechanism to rotate said clothes transversely of the machine and simultaneously impart a slight longitudinal movement thereto, and means to regulate the longitudinal movement of the first mentioned means.

5. In a washing machine, the combination with a clothes pounding mechanism including a vertically reciprocating supporting bar and a plurality of pounders carried thereby, of means to rotate the clothes transversely of the machine and simultaneously impart a slight longitudinal movement thereto, said means including a hanger arm, a slotted post projecting from the supporting bar, a U-shaped link having one end slidably mounted within the slot of said post, and a V-shaped frame having pivotal connection at its ends with said hanger arm and having pivotal connection at its apex with the other leg of said U-shaped link.

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

ALVIN C. KENWORTHY.

Witnesses:

H. P. PETERSEN,

L. H. HUBBARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."