

P. P. KIEL.
 WASHING MACHINE.
 APPLICATION FILED OCT. 29, 1908.

933,183.

Patented Sept. 7, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

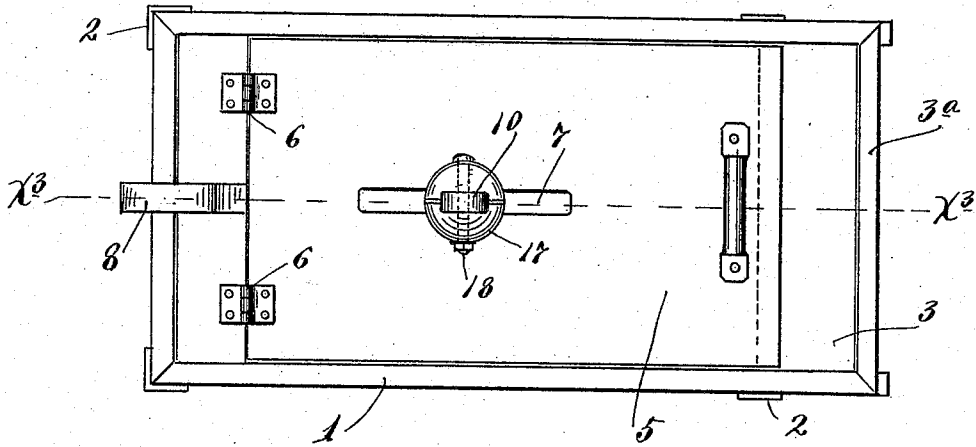
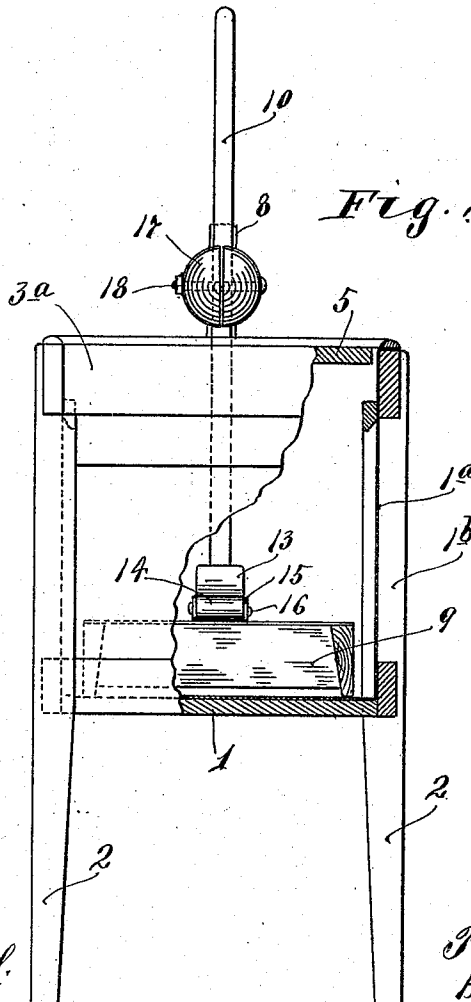


Fig. 2.



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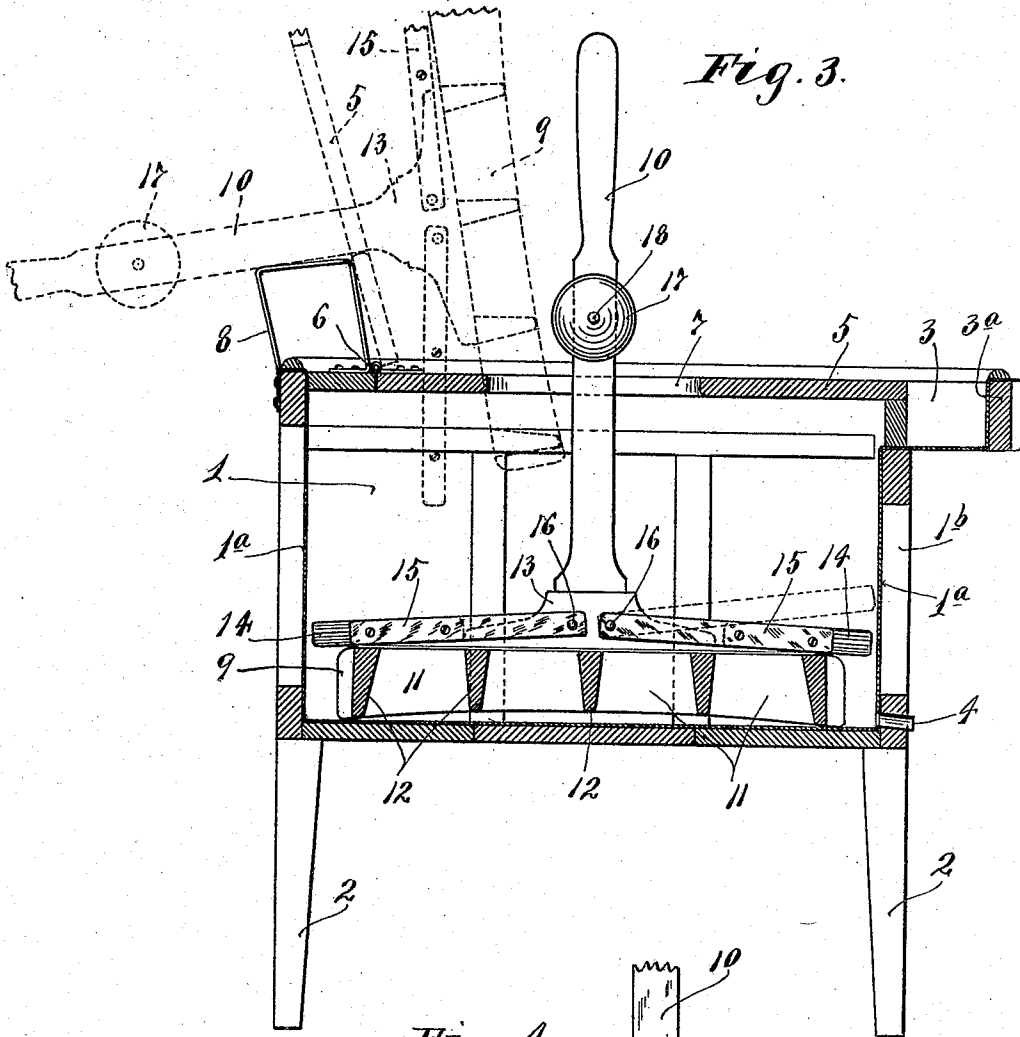


Fig. 4.

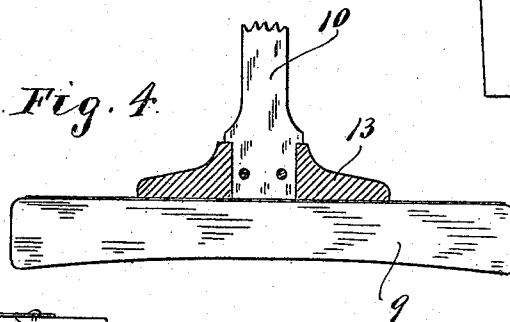
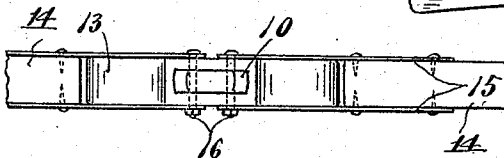


Fig. 5.



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PETER P. KIEL, OF ALBERT LEA, MINNESOTA.

WASHING-MACHINE.

933,183.

Specification of Letters Patent.

Patented Sept. 7, 1909.

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To all whom it may concern:

Be it known that I, PETER P. KIEL, a citizen of the United States, residing at Albert Lea, in the county of Freeborn and State of Minnesota, 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.

My invention has for its object to provide an improved washing machine, and to this end, it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The improved washing machine is illustrated in the accompanying drawings wherein like characters indicate like parts throughout the several views.

Referring to the drawings: Figure 1 is a plan view of the improved machine; Fig. 2 is an end elevation of the machine, with some parts broken away and with some parts sectioned; Fig. 3 is a vertical section taken approximately on the line x^x x^x of Fig. 1; Fig. 4 is a detail in side elevation, showing the so-called dasher head, some parts being sectioned and some parts being broken away; and Fig. 5 is a detail view in plan, showing the thrust arms of the dasher removed from working position.

The washing water and the clothes to be washed are placed within a tank 1, which is preferably of rectangular form and is supported by legs 2. This tank, as shown, is made of a zinc or galvanized metal shell 1^a and a rectangular reinforcing frame 1^b , and at one end, said tank is preferably offset at 3, and provided with an offset wall 3^a , to which a wringer may be conveniently attached. The numeral 4 indicates a drain tube that leads from the bottom of the tank and is adapted to be closed by a suitable plug or stopper, not shown. The tank 1 is provided with a displaceable cover 5, shown as connected thereto, near that end that is opposite to the offset portion 3^a , by means of hinges 6. Extending longitudinally of the central portion of the cover 5, is a slot 7, and secured to the adjacent end portion of the tank 1, in the vertical plane of said slot 7, is a stop or rest bracket 8, shown as in the form of a metal strap bent to form an approximately rectangular loop. This stop bracket 8 limits the opening movement of

the cover 5, and, as will presently be noted, also serves as a dasher rest, see dotted lines, Fig. 3.

For working the clothes within the tank, I provide a so-called dasher which is made up of a dasher head 9 and an operating lever or handle bar 10. The dasher head 9 is formed with a multiplicity of air chambers or pockets 11 for important purposes which will presently appear. As shown, the body of the head 9, is in the form of an inverted rectangular pan, the sides of which are upwardly curved from the ends toward the intermediate portion of said pan. The pockets 11 are formed in the said head by a multiplicity of transverse partitions 12. To the central portion of the back or top plate of the dasher head 9, is rigidly secured a wooden cleat 13 that is provided with a central mortise or seat, into which the lower end of the lever 10 is tightly driven, as best shown in Fig. 4.

The dasher head is provided with a pair of pivotally attached, so-called thrust arms, 80 that extend in opposite directions from the central portion thereof, and the free ends of which are adapted to engage with the end walls or plates of the tank, as will more fully appear in the description of the operation. 85 These thrust arms, which may take various forms, are made up of wooden outer end sections 14 and laterally spaced straps 15. The inner ends of the straps 15 embrace the cleat 13, and are pivotally connected thereto by 90 bolts or pivot pins 16, both of which are preferably passed through the lower end portion of the lever 10, to thereby securely lock the said lever to the said cleat 13, and hence, to the dasher head. The two end sections 14 are rigidly secured one between the outer ends of each pair of straps 16 and are so arranged as to engage the metal shell 1^a .

Rigidly secured to the intermediate portion of the lever 10, is a weight 17 made in two parts that are rigidly but detachably secured together and onto the said lever by a nutted bolt 18. This weight 17 should be located at such a point on the lever 10, that when the cover and dasher are turned upward into inoperative positions, shown by dotted lines in Fig. 3, and when the said lever is resting upon the bracket 8, said weight will be located outward of the said bracket and will over-balance the weight of the dasher head, and thereby hold the said parts in the said inoperative positions, 110

shown by dotted lines in Fig. 3. It will thus be seen that the bracket 8 serves as a stop for limiting the open movement of the tank cover, and as a rest for supporting the dasher in its inoperative position.

The bottom of the dasher head might be flat, that is, have its lower portions in a common plane, but preferably it is made slightly concave or rounded upward at its intermediate portions, as above stated, and as best shown in Fig. 3. This arrangement causes the air chambers 11, in the upwardly moved end of the dasher head, to lift directly upward, and the air chamber in the other end of the head, to press directly downward upon the clothes, thereby, to the greatest possible extent, producing a forced circulation of air through the clothes.

The clothes to be washed, are of course, placed in the bottom of the tank and the inverted chamber dasher head is placed on top of the clothes. The washing action is produced by oscillating or rocking the dasher head back and forth, such motion being imparted thereto, by taking hold of the lever 10 and oscillating the same back and forth. Under this oscillatory movement, the dasher head is alternately lifted, first at one end and then at the other end, and the thrust arms 15 are alternately forced against the heads of the tank, so that they serve as fulcrums for the dasher. More definitely stated, when one end of the dasher head is being raised, the thrust arm at the opposite side of the dasher head will be forced against the adjacent head of the tank, and will prevent the corresponding end of the dasher from being forced against the tank, and, at the same time, will leave the said dasher head free for vertical movements. Stated in another way, when the upper end of the lever 10 is forced toward the left, it will force the free end of the left hand thrust arm against the tank head, and this thrust arm will prevent the left hand end of the dasher head from being forced against the tank head. Of course, when the upper end of the lever 10 is forced toward the right, the free end of the right hand thrust arm will be forced against the tank head, thereby preventing the right hand end of the dasher head from being forced against the right hand tank head or wall. The free ends of the thrust arms, when engaged with the end walls or head of the tank, have only a rocking movement thereon, and hence, produce but very slight wear thereof. Nevertheless, if desired, wearing strips might be provided on the end walls of the tank for engagement with the free ends of the thrust arms 15. The thrust arms will be forced against the walls of the tank while raised approximately, as shown at the right by dotted lines, in Fig. 3. As soon as the

thrust arms are relieved from pressure against the tank walls, they will, of course, drop by gravity on top of the dasher head, or in other words, will assume the positions indicated by full lines in Fig. 3. When the dasher head is oscillated, as above stated, the downwardly pressed end thereof, will, under the rocking action given thereto, be moved against the then operative thrust arm, but caused to move slightly toward the center of the tank; and this action, being alternately repeated at the opposite ends of the dasher head, serves to gather the clothes and to keep the same worked under the dasher head. When one end of the dasher head is lifted and the other end is depressed or forced downward against the clothes, the air confined in the chamber of the downwardly moving end of the dasher head is compressed and forced against the clothes, and as the clothes are pressed downward into such chambers, more or less air will be caused to escape and to percolate through the clothes, thereby producing a highly efficient washing action by setting up an agitation very similar to, but very much stronger than, that produced by boiling. The air chambers at the rising end of the dasher head produce a suction which tends to lift up the clothes, and thus loosen and change the position of the same, so as to give a good opportunity for the water to circulate through the clothes. It will thus be seen that the washing action is produced by a pressing and lifting action and by circulation of water and air through the same. The weight 17 on the lever 10 assists in producing a sort of a pounding action on the clothes under the oscillatory movement of the dasher, and it accomplishes two other functions, to-wit; it serves to hold the dasher in its inoperative position on the bracket 8, when the parts are turned backward, as shown by dotted lines in Fig. 3, and it serves to prevent separation of the dasher from the tank cover or lid, except when the two sections thereof are separated. From what has been said, it will, of course, be understood that the so-called thrust arms 14—15, not only afford fulcrums for the dasher, but also serve to hold the same properly positioned in the tank without the use of any other guides, such for instance, as trunnions on the dasher, and cooperating vertical guides on the sides of the tank.

The dasher with its pivoted thrust arms, as is evident, may very easily be removed from the tank and applied therein. The lower edges of the walls of the intermediate air chambers of the dasher head should be located on a line upwardly curved from the end toward the intermediate portion of said head.

The machine described may be cheaply

constructed, and, at the same time, it is strong and durable. The efficiency of the machine has been demonstrated in practice.

What I claim is:

- 5 1. The combination with a tank, of a dasher arranged to be oscillated therein and provided with oppositely extended thrust arms, the free ends of which are loosely engageable with the end walls of the tank.
- 10 2. The combination with a tank, of a dasher comprising a head and an operating lever, the said head having air chambers in its underside, and the said dasher having oppositely extended, pivotally connected
- 15 thrust arms, the free ends of which are loosely engageable with the end walls of the tank.
- 20 3. The combination with a tank, of a dasher head working therein, provided with a central cleat on its top, an operating lever having its lower end fitted into a seat in said cleat, and a pair of oppositely extended thrust arms pivotally connected to said cleat

by means extending through said cleat and the lower end of said lever, the free ends 25 of said thrust arms being engageable with the end walls of said tank.

4. The combination with a tank having a hinged cover that is provided with a longitudinally extended slot, of a dasher head 30 provided with a lever that projects upward through the slot of said cover, a stop bracket fixed on said tank adjacent to the cover hinge, serving as a stop to limit the opening movement of said cover and as a rest for 35 the lever of said dasher head, and a weight applied to said lever and adapted to overbalance and support said dasher head in its uplifted inoperative position, substantially as described. 40

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

PETER P. KIEL.

Witnesses:

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