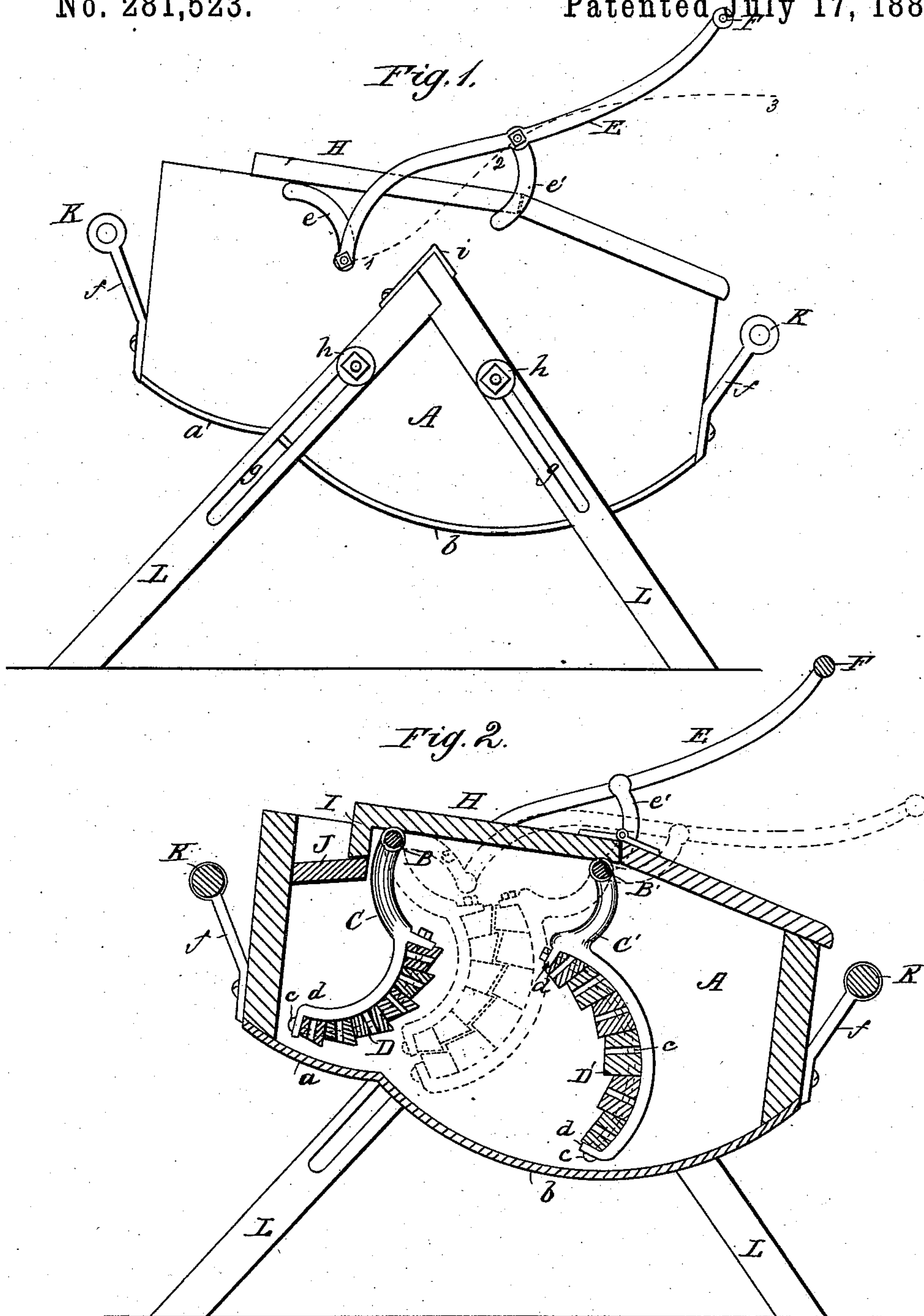


(No Model.)

G. F. KNIGHT.
WASHING MACHINE.

No. 281,523.

Patented July 17, 1883.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE F. KNIGHT, OF CARROLL, OHIO.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 281,523, dated July 17, 1883.

Application filed February 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. KNIGHT, of Carroll, in the county of Fairfield and State of Ohio, have invented a new and useful Improvement in Washing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, and Fig. 2 is a vertical longitudinal section.

My invention relates to washing-machines of that class in which a wooden box or case is supported upon legs and provided with a lever-handle connecting with a set of vibrating slats in the case, which alternately compress and release the clothes and cause the water to circulate through them.

My invention consists in the peculiar construction of the case, in combination with the plungers and the operating mechanism, whereby a more effective form of machine is obtained, as hereinafter fully described.

In the drawings, A represents the case or box of the machine, which is made of wood, and whose bottom is formed of two curves, *a* and *b*, of which *a* is shorter and in a higher plane than *b*. In the upper edge of the end walls of the case are journaled two parallel rock-shafts, B B', having each two downwardly-projecting curved arms, C C', to which are respectively fastened the two series of horizontal slats forming cylindrical plungers D D', one of which, D, has a convex face and the other, D', a concave. These slats are held in place by a tie-rod, *c*, running through holes near the ends of the slats, and fastened by a head and nut on the outside of the lugs *d d*, formed on the curved arms. The rock-shafts are arranged concentrically to the curves *a* and *b* of the bottom of the case, and over which they are respectively placed. The rock-shaft B is provided at its ends outside the case with downwardly-curved arms *e*, and the rock-shaft B' is provided at corresponding points with upwardly-curved arms *e'*, and these are jointed to the double-curved levers E, which at their upper ends are connected by a cross-bar, F, forming the handle. By moving this handle up and down it will be seen that the two slatted plungers are moved in unison alternately

toward and away from each other, and alternately squeeze and release the clothes as they lie partially in the water between. It will be seen that the plunger D' oscillates over the lower curve, *b*, while the other, D, oscillates over the shorter curve, *a*, of the bottom of the case, and this has a peculiar and important action in washing the clothes, for the water is principally in the lower curve, *b*, and little water is on the upper curve, *a*, so that when the plungers are oscillated and come together upon the clothes the plunger D' forces the water from the lower curve up through the clothes, and the water, escaping through the clothes as they are squeezed, passes largely to its upper curve, *a*. Then upon the separation of the plungers this water, flowing from this upper curve back through the clothes, (which have been compressed to a tight roll,) loosens up the same preparatory to the next squeeze, and thus secures a thorough circulation of water through the clothes, producing the best cleansing effect with the least rubbing or wearing action. The object in making the two levels *a* and *b* curved is to keep the lower edges of the plungers always the same distance from the bottom of the case and close to the same in their movement, and thus prevent the water from escaping around the bottom of the plungers, instead of circulating through the clothes, as it should. The object in making the side levers of the working-handle a double curve is to vary the elevation of the handle for a short or tall operator. For a tall operator the adjustment shown is used, while for a child or short operator the levers are turned over, so that the lower half, which connects with the rock-shafts, curves up, and the upper half, which connects with the handle, curves down, as indicated by the dotted lines 1 2 3 in Fig. 1, thus throwing the handle to a lower position.

To the top portion, G, of the case is hinged the cover H, which has a cleat or ledge, I, that fits down upon an inclined shelf, J, in the box, and which shelf forms a receptacle for soap, &c., that is exposed even when the lid is closed, the lid only coming to the edge of said shelf.

K K are handles fixed to offsetting arms *f* on each side of the case. These handles run

the full length of the machine, and serve as hand-holds by which to transport the machine, and also as racks to hang the clothes upon.

L L are the legs of the machine, which are
 5 slotted at *g*, and connected to the ends of the case by means of screw-threaded bolts and clamping-nuts *h*. The object in making these legs slotted is to permit said legs to be drawn up alongside of the ends of the case, so that
 10 the machine can be more compactly stored for transportation. When these legs are extended for supporting the case, they are arranged in inclined position and converge at the top to contact with each other, the end of
 15 one fitting in a notch in the other, and both connected by an angle latch or hook, *i*, that is pivoted to one of the legs and swung over the end of the other. With respect to the feature of the two curves *a* and *b* and their relation to
 20 the plungers, I would state that I am aware that two plungers have been hung above the bottom of a washing-machine having two curves in the same general level, and equal inclination rising to a projecting ridge or angle in the center, and I only claim my arrange-
 25 ment as described, where one curve is in a higher plane than the other, which gives the new result of allowing the water to run from the upper curve to the lower curve when the
 30 plungers are separated, and thus rolling over and loosening up the clothes.

Having thus described my invention, what I claim as new is—

1. The combination, with the two plungers D and D', suspended upon independent rock- 35
 ing shafts, of the case A, having its bottom formed with two independent curves, *a* and *b*, arranged at different elevations or levels, and whose curvature is concentric with the axes of oscillation of their respective plungers, as de- 40
 scribed.

2. The combination, with the case A, having its bottom formed into two independent curves, *a* and *b*, arranged at different elevations or levels, of the rock-shafts B and B', arranged 45
 concentric to said curves, and bearing plungers D D', the reversely-pointing arms *e e'*, and the lever-frame E, substantially as shown and described.

3. The combination, with a washing-machine 50
 case, of two rock-shafts, B B', plungers D D' within the case, and arms *e* and *e'* outside of the case, at each end, one set of which, *e*, point downwardly, and the other set, *e'*, upwardly, and the single side levers, E, jointed directly 55
 to the extremities of the said arms *e e'*, substantially as shown and described.

GEORGE F. KNIGHT.

Witnesses:

H. T. SMITH,
 C. W. KNIGHT.