

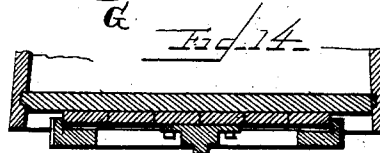
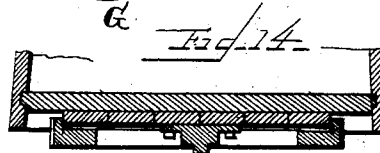
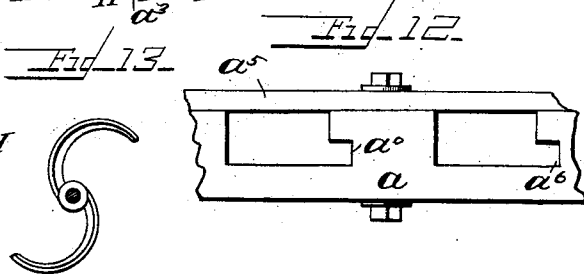
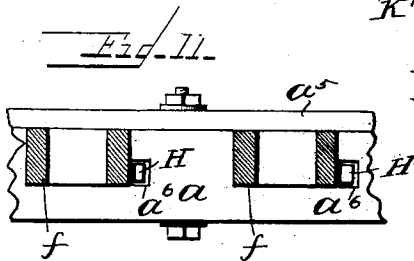
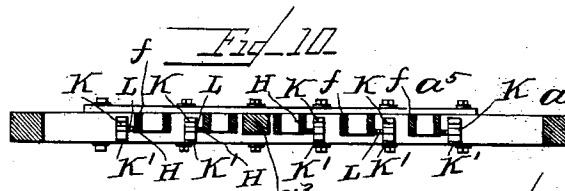
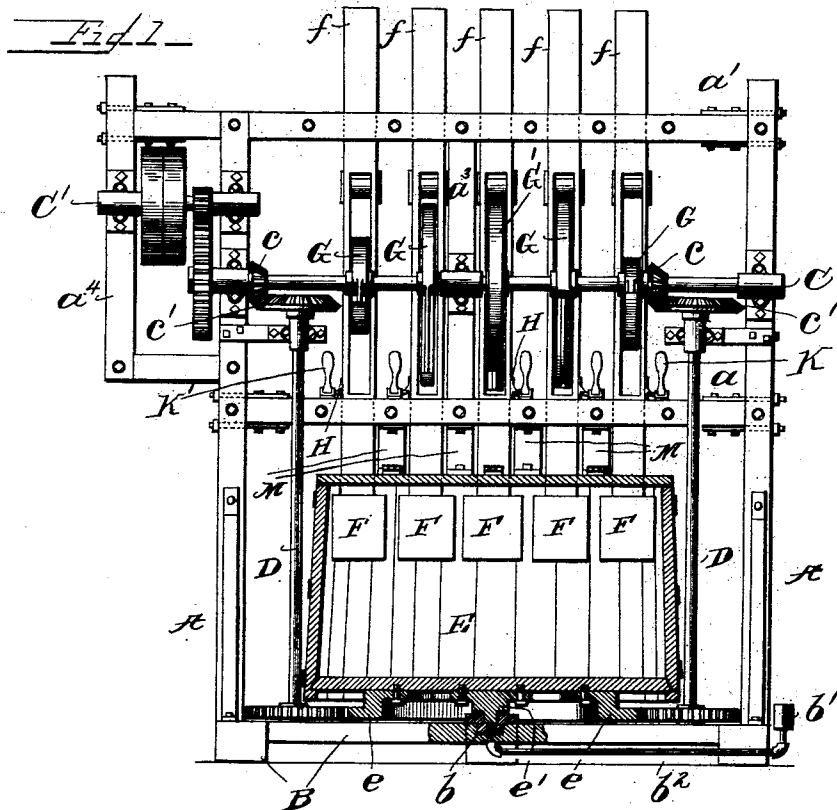
(No Model.)

2 Sheets—Sheet 1.

H. J. FRANK & H. C. WEIHE.
WASHING MACHINE.

No. 541,228.

Patented June 18, 1895.



Witnesses

J. A. Schuchman
E. P. Hubbard

Inventors

Harry J. Frank
and
H. C. Weihe

By

Whitaker, Grant
Attorneys

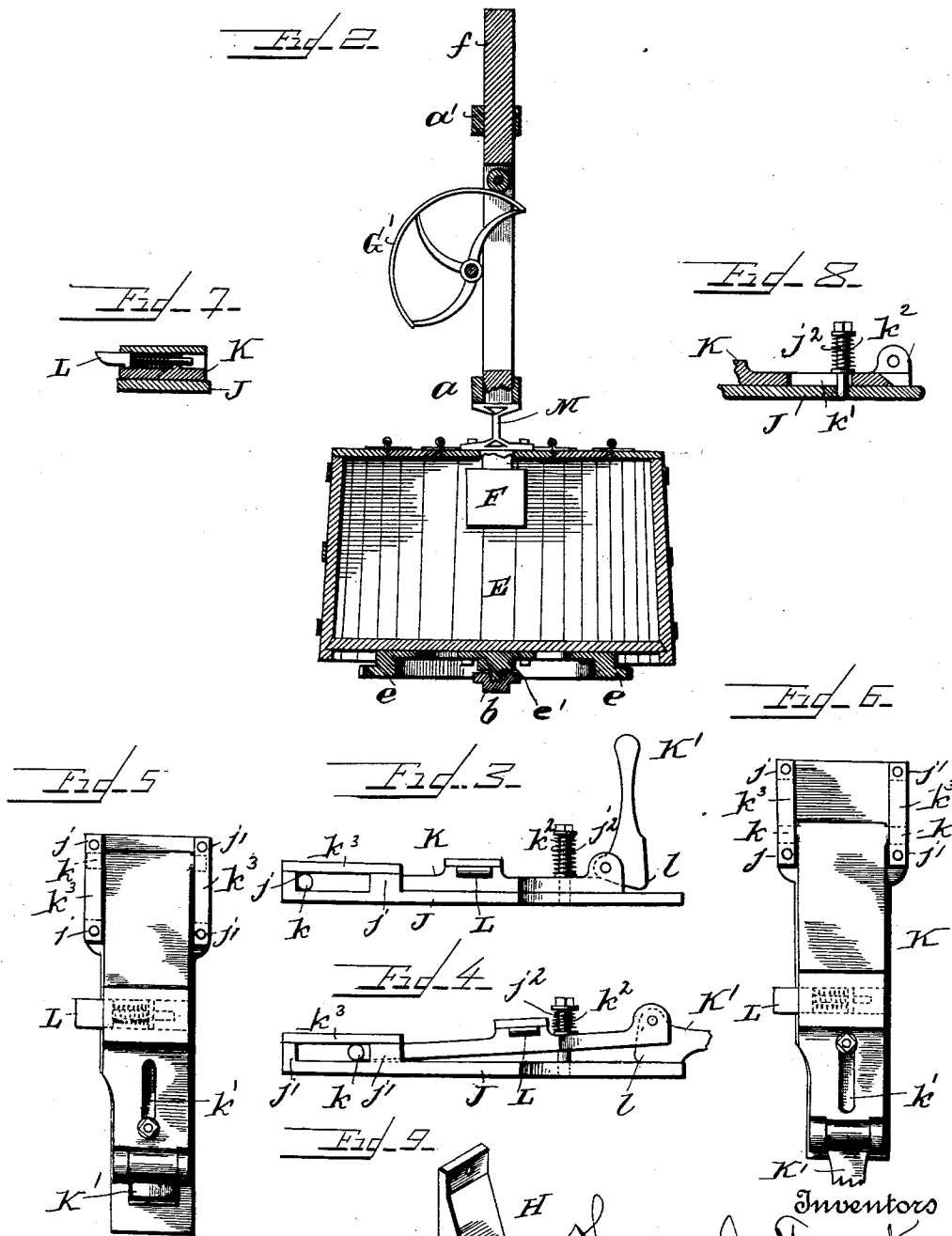
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2 Sheets—Sheet 2.

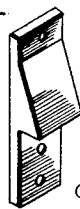
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Witnesses
G. A. Taubenschmidt,
O. P. Hubbard.



Inventors
Harry J. Frank
Hermann C. Weihe
By Whitaker, Preston & Co. Attorneys.

UNITED STATES PATENT OFFICE.

HARRY J. FRANK AND HERMAN C. WEIHE, OF PHILADELPHIA, PENN-
SYLVANIA.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 541,228, dated June 18, 1895.

Application filed August 25, 1894. Serial No. 521,330. (No model.)

To all whom it may concern:

Be it known that we, HARRY J. FRANK and HERMAN C. WEIHE, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Washing-Machines; and we 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.

Our present invention relates to the class of washing machines and more particularly those which employ automatically actuated pounders or beaters.

The best form in which we have contemplated embodying our invention is illustrated in the accompanying drawings and the invention is disclosed in the following description and claims.

In the drawings, Figure 1 is a vertical elevation with the tub and base in section. Fig. 2 is a transverse section, parts being removed. Figs. 3, 4, 5, and 6 are different views of the pounder-catch. Figs. 7 and 8 are details of this construction. Fig. 9 is a view of the catch on the plunger or pounder bar. Fig. 10 is a transverse sectional view of the plunger-bars above the cross-bar *a* to show the preferred arrangement of the lifting-latches in respect to the plunger-bars. Fig. 11 is a partial view of a like section with the lifting-latches removed to show the arrangement of the catches *H* and the offsets *a*⁶. Fig. 12 is a partial top or plan view of the cross-bar *a*. Fig. 13 is a view from the end of the machine of the tappet for operating the side plungers. Fig. 14 is a sectional view of a modified construction of tub-bottom.

In the figures a supporting frame is shown mainly composed of two uprights *A A*, a base *B*, and two cross beams *a a'*. The two cross beams are united centrally of the machine by an upright *a*³ which may be denominated a "steady-post" as it serves to brace and strengthen the cross beams and the upper part of the frame.

Upon one side of the supporting frame is mounted a shaft *C* extending entirely across the frame and supported in bearings on each

of the standards *A A* and the steady-post *a*³. This shaft may be driven in any preferred way. It is, however, in this instance shown as driven from a counter shaft *C'* mounted in bearings on one of the standards *A* and in a bracket or auxiliary frame *a*⁴ suitable gearing connecting them. At each side of the frame, the shaft *C* is provided with bevel gears *c* which gear with bevel wheels *c'* on the upper ends of two vertically disposed shafts *D D*. These shafts have each a spur gear which meshes with the large gear *e* on the bottom of the tub *E*. The tub *E* is provided centrally with a gudgeon *e'* seating in a bearing *b* with which the base *B* is provided. In such constructions when but one vertical shaft is employed, the descent of the pounder nearest this vertical shaft has a tendency to force the tub downward at that point and move the large gear *e* out of engagement with the spur gear on the bottom of the vertical shaft. The actual movements of the parts increase as the parts become worn resulting in a defective operation of the machine. We overcome objectionable results by employing the second shaft on the opposite side of the tub so that each shaft acts in a measure as a stay to resist the evil effects of the blows of the pounder nearest the opposite shaft. It is necessary that this bearing should be kept well lubricated and in order to do this we provide the base with the oil cup *b'* which is connected with the bearing *b* by a small oil pipe *b*².

The pounders or plungers may be of any preferred number. In this instance we show a machine provided with five, arranged in a line across the tub. Each plunger consists of a head *F* with a guiding bar or stem *f* which is free to move in suitable apertures in the cross beams *a a'*. These guiding apertures are made as most clearly indicated in Figs. 10, 11 and 12 and are made to extend to one edge of the cross beam. After the plunger bars are in place the apertures are closed by a bar *a*⁵ bolted to that side of the cross beam and serving to hold the plunger bars in position. Each of the plunger bars is slotted to receive the actuating tappet and at the upper end of the slot is provided with a friction roll to avoid friction, the tappet engaging this roll.

The tappets are mounted on the shaft C and the outer ones on each side G are of the form shown in Fig. 13 which gives two motions of each plunger to one rotation of the shaft C.

5 As the materials beneath the plunger or plungers nearest the center are not moved as rapidly as those beneath the plungers near the sides of the tub, it is found best to reduce the number of movements of one or more of the

10 central plungers or pounders. In this construction only the movement of the central plunger is thus modified. Instead of actuating the central plunger by the same tappet as the outer plungers, it is actuated by the

15 tappet or cam G'. Shown in Fig. 2. It will be seen that the construction of this tappet or cam is such as to raise the plunger after it has descended upon the materials as soon as the other plungers or pounders are raised, but

20 the cam or tappet is, however, provided with a circular part which holds the pounder or plunger raised during a half revolution of the shaft C, permitting it to drop only once during each revolution of the shaft.

25 It is sometimes desirable to have one or more of the plungers or pounders held out of action for a time. To do this we provide the construction shown clearly in Figs. 3 to 9 inclusive. It is in form of a device to engage

30 the plunger when in its highest position. Such devices have been heretofore employed but in most of such constructions as the holding means only engages with the plunger on its downward movement, the plunger or

35 pounder would be struck and slightly raised by the tappets on each revolution resulting in unnecessary jar and wear of the parts and sometimes in releasing the plunger. To avoid this we provide our construction with means

40 for raising the plunger held out of operation to a position in which it will be out of contact with the tappets. The device is termed by us a "latch" and because of this peculiarity we term our improved construction a "lift-

45 ing latch."

The guiding aperture of each plunger bar in the cross beam a is made with the off set a^6 and each plunger bar is provided with the catch H (see Fig. 9) which passes freely

50 through the off set a^6 . The latch proper to engage the catch is secured to the top of the cross beam a . It is composed of two main parts, the base J which is fixed to the cross beam and the movable part K mounted

55 thereon.

The base J of the latch is provided at its rear end with two lugs $j j'$ on each side. The part K has its rear end extending between the lugs $j j'$ and is provided with trunnions $k k'$

60 which lie in the space between the lugs $j j'$ which limit the movement of the plate K on the base J. Near the forward part of the two plates the movable plate K is provided with a slot k^2 and a pin j^2 rigidly secured to the

65 lower plate extends upward through this slot and a spring k^3 is placed on the rod and bears upon the movable plate K. This spring is se-

cured by a nut and washer upon the pin or in any preferred manner. The spring is of such strength as to keep the movable part in any

70 position to which it is moved and to hold it upon the base plate.

The movable plate K is at its forward end provided with the hand lever K' which is pivoted to the plate K and is provided with a

75 cam L. The plate K is provided with a spring latch L which extends beyond one side of the plates J and K. A plate k^3 may be fixed upon the lugs $j j'$ so as to loosely confine the trunnions k , but this is not essential as the spring

80 k^2 will ordinarily hold the movable plate in place. The latch is placed in such a position on the cross beam that when the movable plate is forced backward to the position shown in Fig. 5, the spring latch L will be out of

85 the way of the catch H and the plunger will be free to be raised and dropped by its tappet. When it is desired to throw any one of the plungers out of operation, the operator

90 will by grasping the handle K' draw the movable plate forward bringing it into the position shown in Fig. 6, in which position the spring latch L will be in the path of the catch H on the plunger bar. As the plunger bar is

95 raised thereafter the catch H will engage with the spring latch. The operator will then turn the hand lever to the position shown in Fig. 4, in which position the cam will raise the plate K and plunger so that the tappet of the plunger can rotate freely without engaging

100 or lifting the plunger.

The tub may, if preferred, be provided with a cover. When such a cover is desired, we secure a central portion of the cover provided

105 with apertures through it for the passage of the plunger bars to the cross beam by brackets M and hinge to each side of this central portion one or more flaps as shown in Fig. 2.

The operation of the improved device will be readily understood from the foregoing de-

110 scription. The plunger bars may be and preferably are provided with metallic strips to lessen wear upon them in the guiding apertures of the frame. The object of having the two vertical shafts to give motion to the

115 tub is to insure steadier motion of the tub and give the tub holding means on each side, resulting in the better and more uniform operation of the machine.

We may sometimes choose to additionally

120 strengthen the bottom by securing supporting strips preferably with the grain at right angles to that of the bottom proper as shown in Fig. 14.

What we claim, and desire to secure by Letters Patent, is—

125

1. In a washing machine the combination with a revoluble tub, of a series of pounders arranged across the tub, a tappet shaft for operating said pounders said shaft being provided with a less number of tappets for a

130 pounder near the center of the tub said shaft being provided with means for holding the pounder raised during the intervening opera-

tions of the other pounders, substantially as described.

2. In a washing machine the combination with a revoluble tub, of a series of pounders arranged across the tub, a tappet shaft for operating said pounders, said shaft being provided with a less number of tappets for the pounder nearest the center of the tub, the tappet for said pounders having a concentric part to hold the plunger raised during the intervening operations of the other pounders, substantially as described.

3. In a washing machine the combination with a series of pounders and operative mechanism therefor, of an independent latch for each pounder for engaging and holding the pounder out of operation, said latch being provided with means for raising the pounder engaged by it, and holding the same out of contact with the tappet substantially as described.

4. In a washing machine the combination with a series of pounders and operative mechanism therefor, of an independent latch for each pounder for engaging and holding the pounder out of operation, said latch being movable into and out of operative relation with the pounder and provided with means for raising the pounder engaged by it, and holding the same out of contact with the tappet substantially as described.

5. A latch for the pounders of a washing machine having a base plate rigidly secured

to the frame of the machine and a part movably mounted on the said base plate and carrying a plunger engaging projection whereby the said projection can be moved into and out of operative position, substantially as described.

6. In a latch for the pounders of a washing machine the combination with the base plate, of the movable plate provided with a spring latch to engage the pounder and the hand lever provided with a cam for raising the pounder engaged by the spring latch, substantially as described.

7. The combination with the base plate provided at one end with the lugs $j j'$, of the movable plate having trunnions $k k$, guiding means for the other end of the movable plate, an elastic holding means, and the spring latch substantially as described.

8. The combination of the base plate having lugs $j j'$, of the movable plate having near one end the trunnions k and the slot near the other end, of the pin passing through said slot, the spring pressing upon the movable plate, and the spring latch, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

HARRY J. FRANK.

HERMAN C. WEIHE.

Witnesses:

JACOB S. DUVALL,

EDITH MAY DUVALL.