

983,611.

G. C. DUNHAM.
 WASHING MACHINE.
 APPLICATION FILED JAN. 14, 1910.

Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.

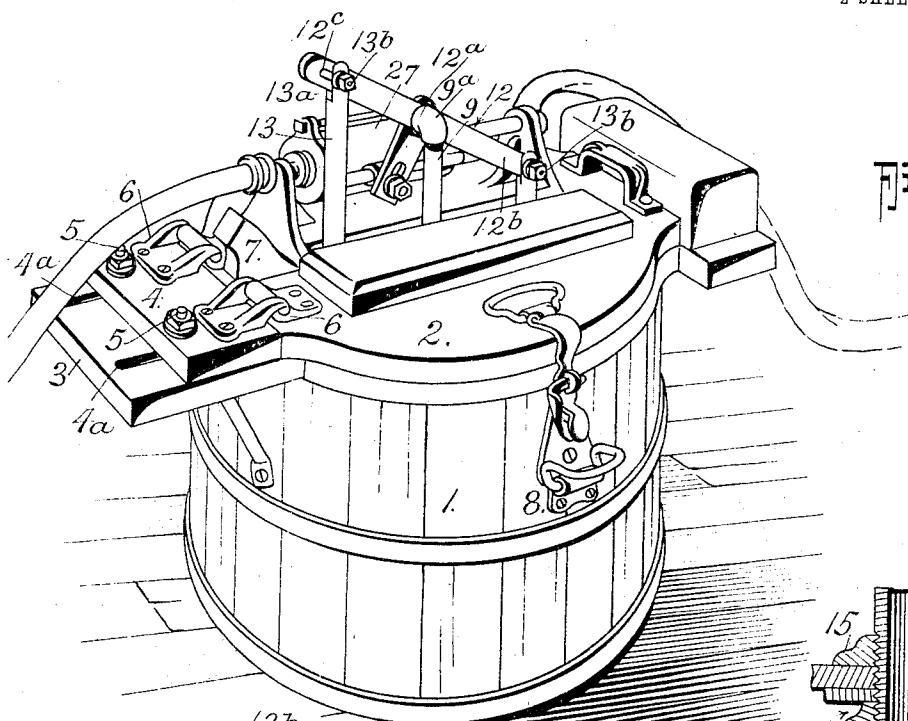


Fig. 1.

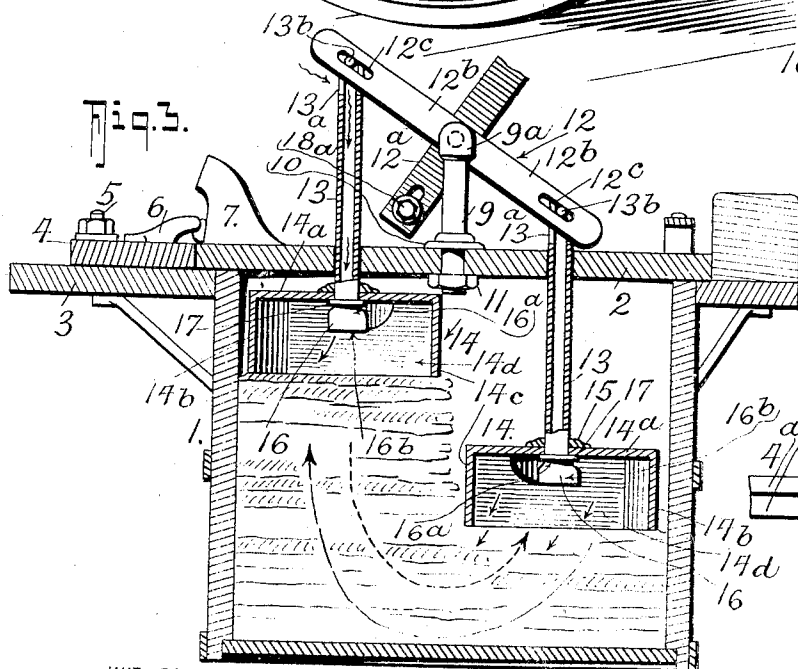


Fig. 3.

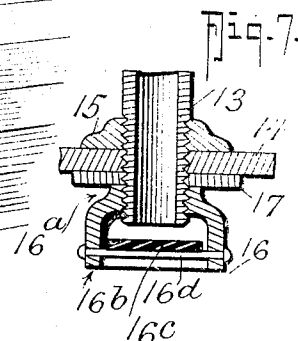


Fig. 7.

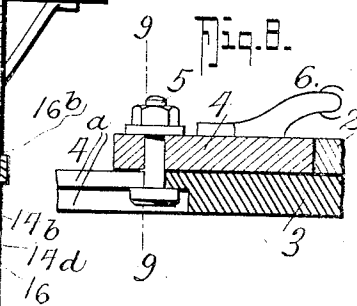
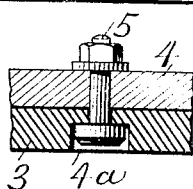


Fig. 8.

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Fig. 9.



INVENTOR

George C. Dunham

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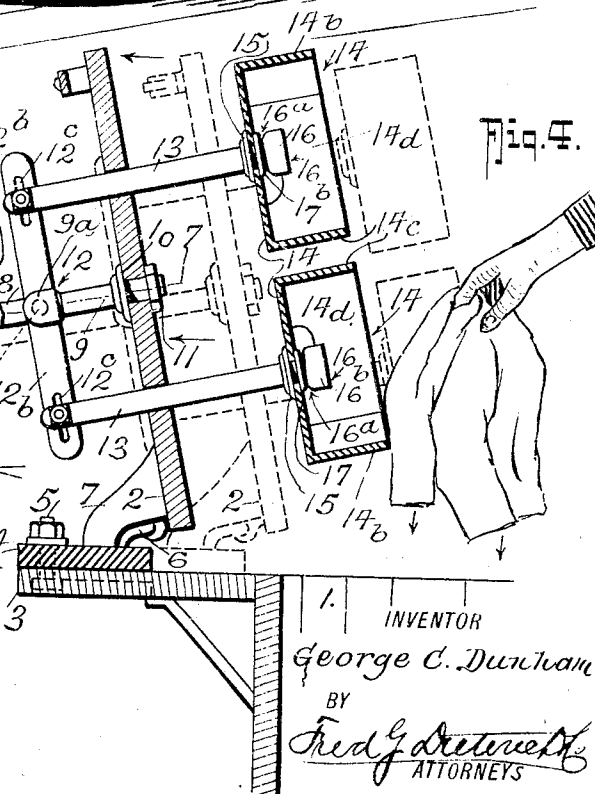
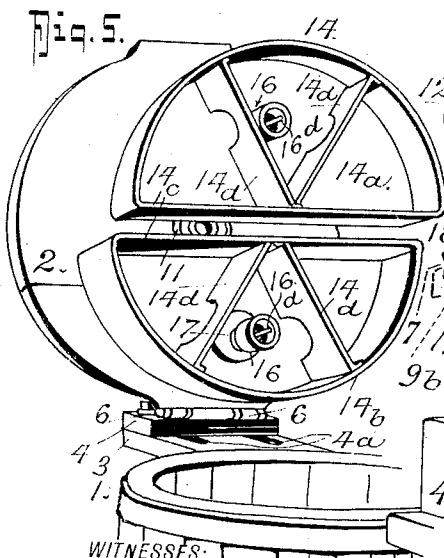
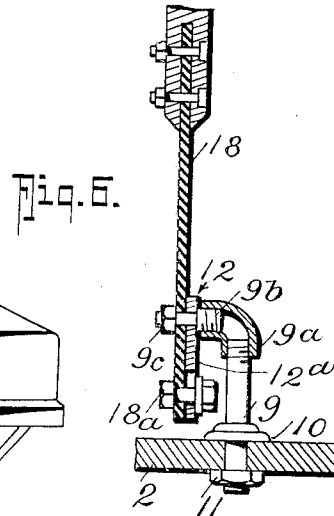
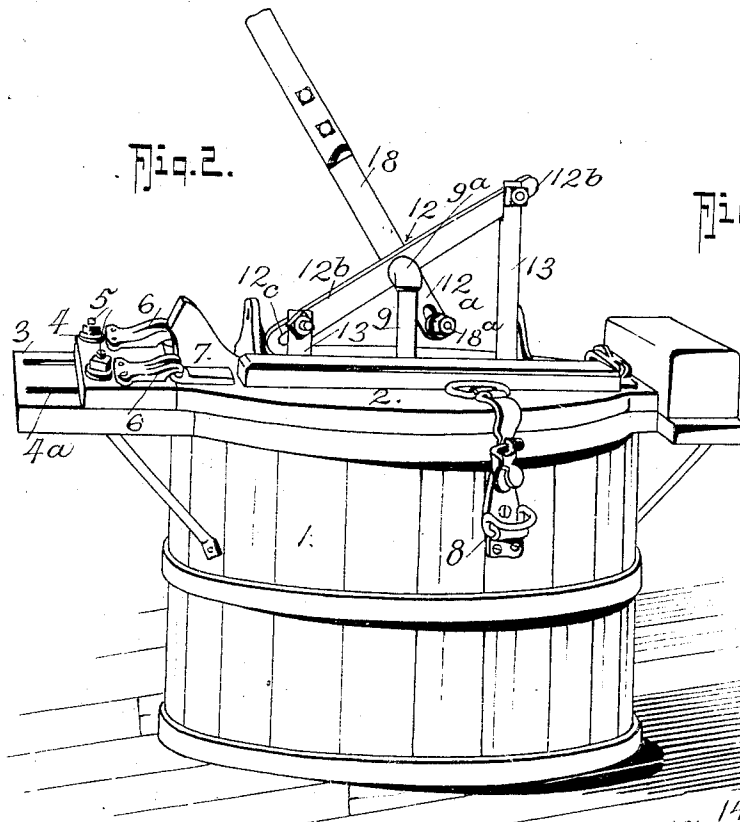
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GEORGE C. DUNHAM, OF CINCINNATI, OHIO.

WASHING-MACHINE.

983,611.

Specification of Letters Patent.

Patented Feb. 7, 1911.

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To all whom it may concern:

Be it known that I, GEORGE C. DUNHAM, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

My invention is an improved washing machine of the reciprocating pounder type, and the invention primarily has for its object to provide a machine of the type stated of a simple and effective construction, in which the parts are so designed to cooperate that fine and delicate fabrics may be washed with equal facility as coarse fabrics and with little or no danger of injury thereto.

To this end my invention provides a tub or casing having smooth inner walls and a lid whereby the tub may be closed substantially water-tight, a pair of reciprocating pounder air compressor sections operating in the tub to impart an undulating motion to the clothes and washing fluid in the tub and to force compressed air and washing fluid to flow through the clothes, the compressor-pounder having provisions for obtaining a constant supply of air from the outside of the tub and the compressor-pounder sections also conform in their outline or shape, each to substantially one-half the cross sectional outline of the tub in which they are used. This gives the greatest possible capacity to the compressor-pounder.

My invention also provides means for so mounting the compressor-pounder on the lid and the motive power therefor also on the lid, and so connecting the lid to the tub that the same may be moved out of alignment with the tub when it is desired to remove or insert the clothes to be washed.

Those novel details of construction, combination and arrangement of parts, all of which will be hereinafter fully described and specifically pointed out in the appended claims, also constitute a part of my invention.

In the drawings,—Figure 1, is a perspective view of my invention adapted to be operated by a water or other motor of the reciprocating type. Fig. 2, is a similar view of the invention adapted for manual operation. Fig. 3, is a central vertical longitudinal section of the form shown in Fig. 2, the parts being in their operative position with the compressor-pounder sections at the limit

of their stroke. Fig. 4 is a detail sectional view and part side elevation of a part of my invention showing the lid open and moved back to permit the ready withdrawal of clothes from the tub, the lid being shown in dotted lines in the position it assumes just prior to being closed down on the tub. Fig. 5, is a perspective view of the invention with the lid open. Fig. 6, is a detail section on the line 7—7 of Fig. 4. Fig. 7, is a detail enlarged section of the valve mechanism showing how the compressor-pounder devices are jointed to the pounder heads. Fig. 8, is a detail sectional view of the hinge lid support. Fig. 9, is a detail section on the line 9—9 of Fig. 8.

Referring now to the accompanying drawings in which like numerals and letters of reference indicate like parts in all of the figures, 1 represents the tub or barrel which has its inner wall surface smooth, and is closed by a lid 2. The tub 1 is provided with a bracket 3 to which a block or plate 4 is bolted at 5, the bolts 5 passing through slots 4^a in the bracket 3 to permit of the plate 4 having sliding movement on the bracket 3 so that the lid can be moved back to bring the compressor-pounders out of the way when the tub is opened. The lid 2 is hinged at 6 to the plate 4 and has a stop 7 to engage the plate 4 and support the lid and its carried parts when the lid is open. The lid is securely held down to effect a tight closure of the tub by suitable devices 8, as shown in the drawings.

9 is a post formed of a rod or pipe that is passed through a central hole in the lid 2 and secured rigidly in place by a collar 10 and nut 11, the post having an elbow 9^a terminating in a pivot bolt or pin 9^b to receive a walking beam 12. The walking beam 12 is secured to the pin 9^b by a nut 9^c to have pivotal movement thereon, and has a short arm 12^a and pair of alining long arms 12^b at right angles to the arms 12^a. The arms 12^a have a slot 12^c near their ends for a purpose hereinafter to appear.

13—13 are two hollow pipes which pass through holes in the lid and whose upper ends are slit at 13^a to receive the ends of the arm 12^b of the walking beam 12 to which they are pivoted at 13^b. The arms 12^b are slotted to permit passage of the pivot pins or bolts 13^b, and to form an opening into the pipe 13. The post 9, as before stated, is located centrally on the lid, while the pipes

or hollow rods 13 pass through holes located about midway between the rim of the lid and the center thereof.

Within the tub 1 the pipes 13 each carry a section of a compressor-pounder 14, formed of two half-sections, one of which is attached to each pipe 13, and the compressor-pounder 14, in plan view has an outline substantially that of one half the cross sectional outline of the tub. In other words, when the tub 1 is round or circular, in cross section, each compressor-pounder section will be of semi-circular form. Each compressor-pounder section 14 comprises a base plate 14^a and a depending rim 14^b—14^c, the portion 14^b of which is curved to conform to the curvature of the tub, while that portion 14^c is straight across. The chamber formed in the rim 14^b—14^c is sub-divided by partitions 14^d into a plurality of compartments, the partitions 14^d having portions cut away adjacent to the plate 14^a to form air passages. The pipe 13 passes through a hole in the base plate of the compressor-pounder section 14 and is secured thereto by a collar 15 and a valve casing 16 with the interposed washer 17. The collar 15 and valve casing 16 are threaded onto the pipe 13, as indicated. The valve casing 16 has a reduced part 16^a that threads onto the pipe 13, and an enlarged part 16^b to receive the disk valve 16^c that closes the end of the pipe 13 on the down stroke thereof. A valve stop 16^d is carried by the casing 16 against which the valve 16^c rests on the up stroke of the pipe 13. The pipe 13 communicates with the central compartment of the respective compressor-pounder section.

When my invention is to be motor driven, the motor 27 (of any approved type) is connected to the arm 12^a, as shown in Fig. 1 of the drawings (the motor shown in such figure being of the reciprocating type). When the invention is used as a hand power device an operating lever 18 is secured to the pivot 9^b and is secured at 18^a to the arm 12^a as shown in Fig. 2 of the drawings. The lever 18 may be of any approved shape and design and varied to suit the requirements of the trade.

In the practical application of my invention the clothes to be washed are placed in the tub 1 together with the washing fluid, the lid is secured down, thus effecting a substantially tight closure of the tub. Power is then applied to the walking beam 12 (either through the motor 27 or lever 18, as the case may be) and the compressor-pounder sections are caused to move alternately up and down. This causes air to be admitted into the compressor-pounder section chambers on the up stroke of the respective section through the pipes 13 and valve mechanism 16. On the down stroke the air within the compressor-pounder sec-

tions 14 is forced through the clothes, together with the water, as shown in Fig. 3 in the drawings. As the compressor-pounder sections are alternately moved up and down, the clothes and washing fluid are caused to perform a continuous oscillating motion, thus effecting agitation of the same and by making the fluid level about one-half or three-fourths the tub's capacity the clothes are alternately lifted out of the water and immersed under the same, as the sections 14 are reciprocated.

By having the top fit tightly on the tub 1 the air from within the tub escapes but slowly so that a pressure greater than atmospheric pressure may be maintained within the tub during the washing operation to supply a greater quantity of air to the tub than is possible with an open tub and thereby affording a more abundant supply of oxygen to the washing fluid and thus assisting it in its detergent operation. Again by making all of the operating parts of my invention of such design that they may be mounted on the top of the tub they may be moved out of the way when required by a single operation.

When the lid is swung open the plate 4 is shoved back from the position shown in dotted lines in Fig. 4, to the position shown in full lines in Fig. 4, so that when the lid is open the compressor-pounder 14 will not be in the way of removing the clothes, or inserting the clothes, as the case may be.

From the foregoing description taken in connection with the accompanying drawings it is thought the complete construction, operation and many advantages of my invention will be readily understood by those skilled in the art to which the invention appertains, and I desire to say that slight changes of construction may be readily made without departing from the spirit of the invention or the scope of the appended claims.

What I claim is:

1. A washing machine comprising a tub, a bracket mounted on said tub, a plate slidable on said bracket a lid hinged to said plate to effect a closure of said tub, a post supported by said lid and having a projection extending at right angles, a walking beam pivoted to said post, said walking beam having a central lever portion, a power applying device connected with said central lever portion of said walking beam and wholly supported on the top of said lid, hollow pipes passing through apertures in the lid of said tub, and said hollow pipes being pivoted to said walking beam, compressor-pounders carried by said pipes within said tub, all being arranged substantially as shown and described.

2. A washing machine comprising a tub having a smooth inner wall, a flat lid for closing said tub, a post centrally mounted

on the lid and having a bearing extended at right angles to the post proper, a T-shaped walking beam pivoted to said extended bearing, a pair of pipes pivoted to the ends of said walking beam, said walking beam having slots in which the pivots of said pipes operate, the intermediate arm of said T-shaped walking beam having connected thereto a power applying device for oscillat-

ing said walking beam, compressor-pounders 10 within said tub on the ends of said pipes, said pipes projecting through apertures in the lid of said tub, substantially as shown and described.

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Witnesses:

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CHAS. S. BELL.