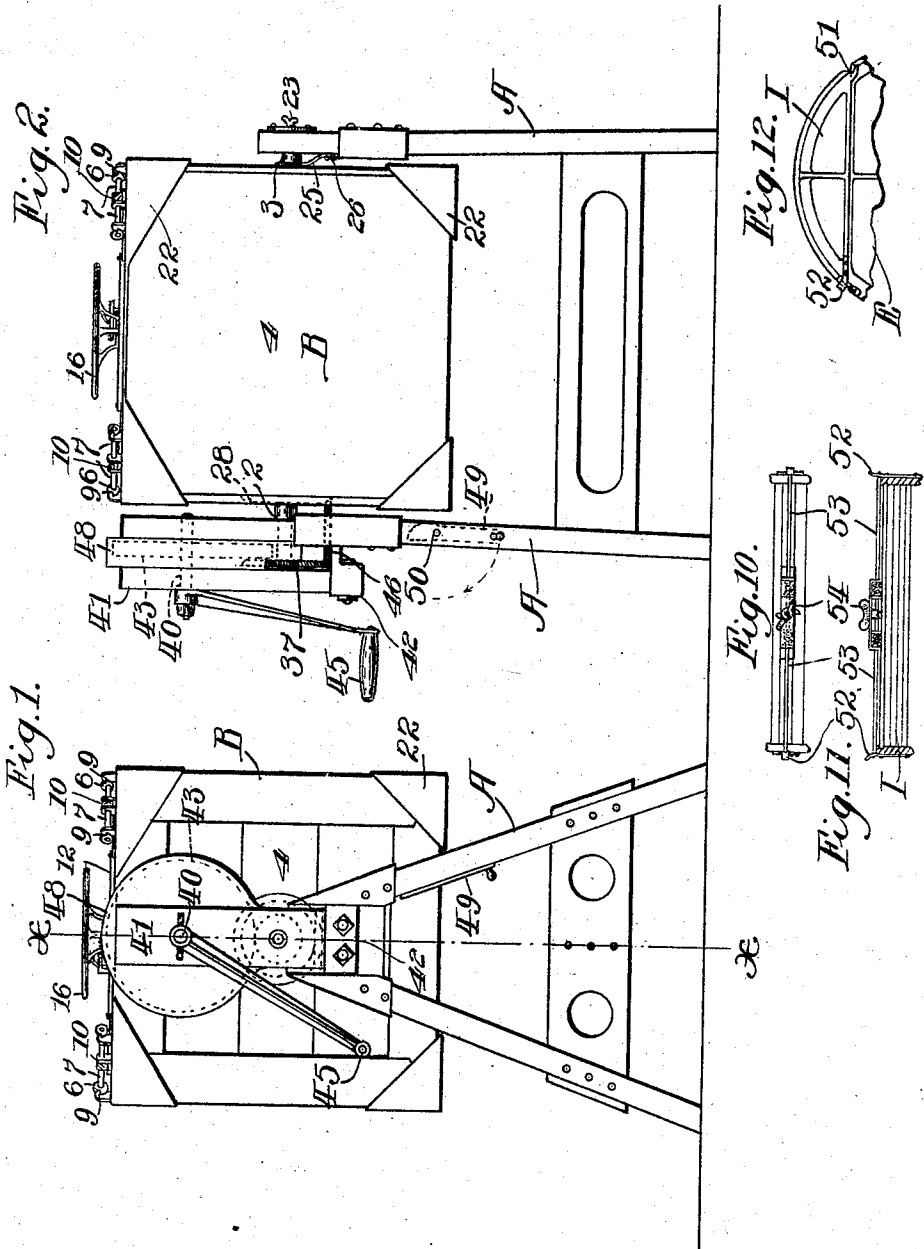


A. L. KOENEKE.
WASHING MACHINE.
APPLICATION FILED AUG. 31, 1907.

932,617.

Patented Aug. 31, 1909.
3 SHEETS—SHEET 1.



Witnesses:
A. Fischer.
J. M. Dahlgren.

Inventor:
Albert L. Koeneke,
by: *H. E. Bradbury.*
Attorney.

A. L. KOENEKE.
WASHING MACHINE.
APPLICATION FILED AUG. 31, 1907.

932,617.

Patented Aug. 31, 1909.
3 SHEETS—SHEET 2.

Fig. 4.

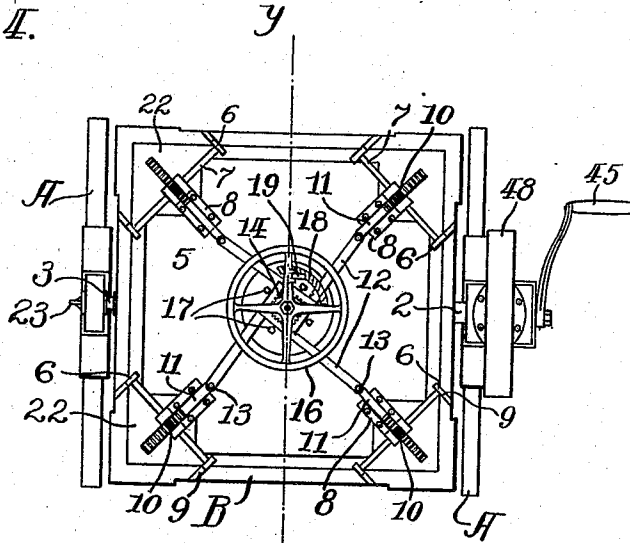
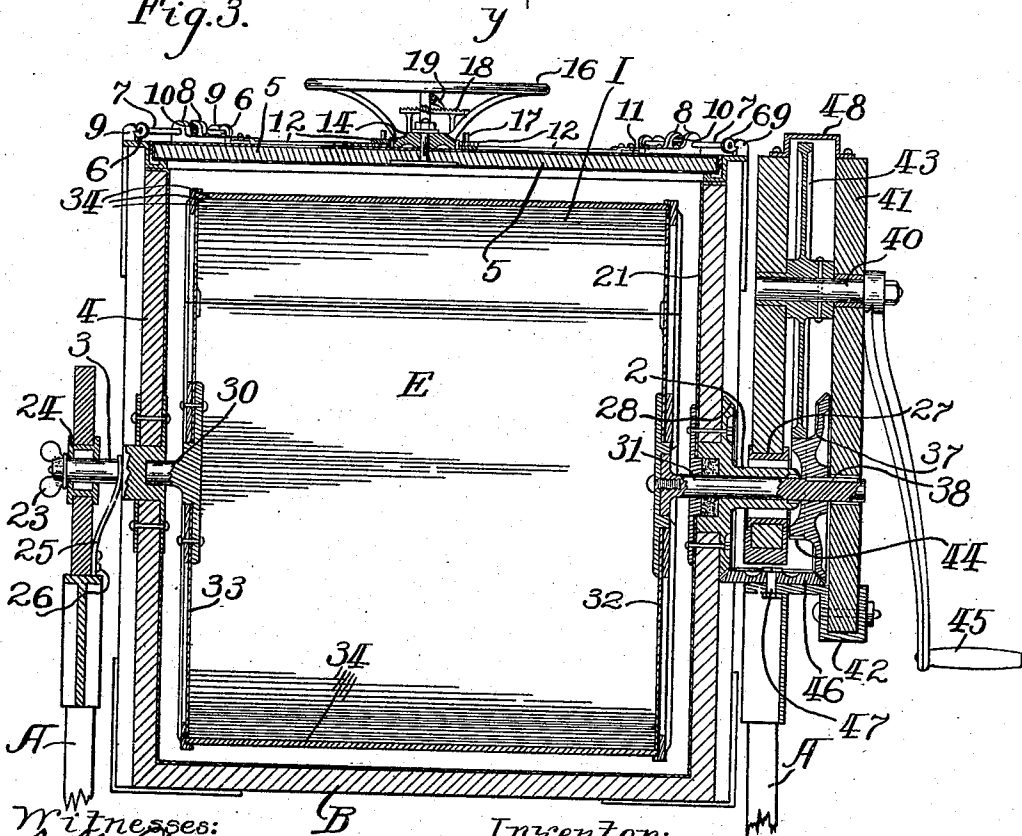


Fig. 3.



Witnesses:
C. N. L. Smith
J. Fischer

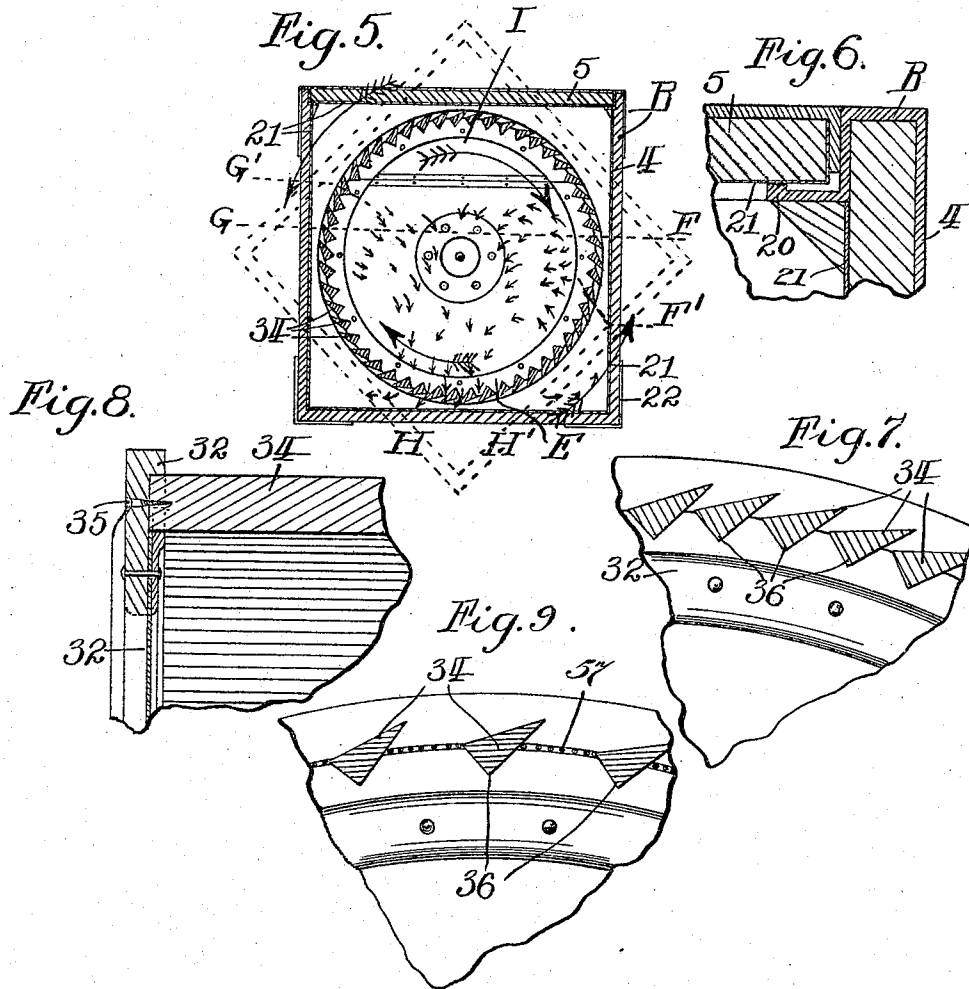
Inventor:

Albert L. Koeneke,
by: *J. S. Bradbury,*
Attorney.

A. L. KOENEKE.
 WASHING MACHINE.
 APPLICATION FILED AUG. 31, 1907.

932,617.

Patented Aug. 31, 1909.
 3 SHEETS—SHEET 3.



Witnesses:
A. L. Koeneke
J. M. Dahlgren

Inventor:
 Albert L. Koeneke,
 by: *W. H. Hadbury*
 Attorney.

UNITED STATES PATENT OFFICE.

ALBERT L. KOENEKE, OF ST. PAUL, MINNESOTA.

WASHING-MACHINE.

932,617.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed August 31, 1907. Serial No. 390,883.

To all whom it may concern:

Be it known that I, ALBERT L. KOENEKE, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in Washing-Machines, of which the following is a specification.

My invention relates to improvements in washing machines and has for its primary object a device of its kind which is adapted to wash clothes by hand and mechanical power efficiently and with a minimum amount of energy.

Generally speaking, my invention includes among its principal elements, a cube case within which a washing cylinder is journaled, said parts being provided with suitable drive mechanism by which they are revolved in opposite directions from a single source of power.

In the accompanying drawings forming part of this specification, Figure 1 is an end view of my invention; Fig. 2 is a side view; Fig. 3 is a section of the machine taken on the line X—X of Fig. 1; Fig. 4 is a plan view; Fig. 5 is a section of the washing mechanism removed from the frame, taken on the line Y—Y of Fig. 4, the broken lines indicating the position which the cube inclosing case assumes during its revolution; Fig. 6 is an enlarged detail view in section illustrating the joint between the lid of the cube case and its walls; Fig. 7 is a detail end sectional view of a portion of the washing cylinder in the cube case; Fig. 8 is a detail longitudinal section of a detail portion of the cylinder; Fig. 9 is an end detail sectional view of the cylinder showing a modified construction, and Figs. 10, 11 and 12 are detail views of the locking mechanism on the cylinder.

In the drawings A represents a suitable supporting frame which is preferably constructed in the form of a horse in which main gudgeons 2 and 3 on the cube case B are suitably journaled. The supporting frame may be of any suitable construction desired, the object being to provide a rigid frame in which said case is adapted to revolve. The cube case B may be in the form of a hollow paralleliped or other suitable inclosure, such being considered the full equivalent of what I term a "cube case". Said case consists of a body 4 having a lid 5 tightly secured thereon so that any water contained therein will not leak out during

the operation of the machine. The lid covers substantially an entire end of the cube case so that when removed, water in the case will empty itself *en-masse* without passing through a bung hole. The means by which the lid is secured tightly in place on the cube case consists of a pair of cam hooks 6 on the ends of a number of shafts 7. Each of these shafts is journaled near each corner of the lid in a block 8.

The cam hooks are adapted to engage below shoulders 9 which are fastened to the upper edges of the sides of the cube case so that when the shafts 7 are turned the lid is pressed down tightly upon the case. A pinion 10 is mounted substantially midway between the ends on each shaft 7 and teeth on racks 11 mesh with the pinions. Each rack is provided with a pitman rod 12 pivoted at 13 thereto and meshing near its free end with a single pinion 14 near the center of the lid. The pinion 14 is formed upon a hand wheel 16 which is journaled upon the lid 5. Guide pins 17 hold the pitmen with their free ends meshing with the pinion 14. A ratchet segment 18 on the cover, and a spring dog 19 on the hand wheel sweeping over the teeth of said segment, serve to lock the pitmen with the cam hooks tightly engaging the shoulders 9 when the lid is tightened upon the case. A tight joint is formed between the side walls of the cube case and the lid by means of an inwardly-projecting lip 20 on said walls upon which the lid impinges when pressed downward by means of the cam hooks 6. The inner surfaces of the cube case including the lid are suitably lined with sheeting 21 made of zinc or any suitable material, and the corners of the cube case are provided with metal caps 22 which serve to strengthen the construction of the cube case and to hold the parts thereof tightly together. The cube case is held from longitudinal movement when the shift 49 is out of contact with the cube case by means of a spring 25 and a thumb screw 23. The spring is supported upon the frame A by pins 26 and presses inwardly against the gudgeon 3. The thumb screw 23 on the outer end of the gudgeon impinges against the journal 24 and limits the inward movement of the cube case. The spring permits the cube case and gudgeons 2 and 3 by which it is carried to be moved outwardly by said shift as will appear in the following description. The gudgeon 2 revolves in a journal

27 on the frame and is provided with a bevel gear 28.

Journalled upon supplemental gudgeons 30 and 31 is a wash cylinder E which is adapted 5 to hold the clothes or other articles to be cleaned. This cylinder has a pair of heads 32 and 33 in the form of metal disks between which are a series of triangular blades 34 which are substantially equally spaced 10 apart and fastened in place by means of screws 35 passing through the heads. Each blade in cross section has a right angle 36 and is set with said angle directed into the cylinder. The supplemental gudgeons 30 and 15 31 are respectively seated in the main gudgeons 3 and 2. The gudgeon 31 is provided with a bevel gear 37 near its end which is fastened by means of a pin 38. A drive shaft 40 is journaled at its inner end in the 20 frame and at the outer end in a vertical supporting post 41 which is carried in a flanged bracket 42 on said frame. The drive shaft carries a gear 43 which meshes with a transmission gear 44, the latter being integral with the bevel gear 37. Power is applied to the drive shaft by means of a handle 45 and transmitted to the cylinder through the gears 43 and 44 to revolve the latter in one direction. By means of an intermeshing 30 bevel gear 46 which is journaled upon the frame by means of a bolt 47 between the bevel gears 28 and 37, motion is simultaneously transmitted in the opposite direction to the cube case. Part of the gears are provided with a casing 48 which protects them 35 from dust and water.

The wash cylinder has its blades disposed with their outer faces inclined inwardly as related to the forward movement of the cylinder, the object being to induce the water to flow from the cube into and through the cylinder. The cube case revolving in the opposite direction from that in which the cylinder E revolves, assists in promoting a current of water passing through the inner chamber. The induced action of the water during operation is as follows: Upon turning the cylinder and cube case forwardly the edges of the slats advance and the cube revolves in the opposite direction, the level of 40 water in the case and cylinder falling on one side from F to F' and rising on the opposite side from G to G'. This action produces two opposite currents which merge with force near the center or medial portion of the cylinder forming a single current which is drawn swiftly downwardly and divided again to reënter the cylinder at its sides, repeating the operation, the arrows in Fig. 5 45 indicating the action. As the cube case revolves in the opposite direction from that of the cylinder, both the force with which the water enters the cylinder and the suction of gravitation are greatly augmented. The 50 places of entry and exit shift back and

forth as the sides or angles of the cube present faces opposite the lowest level of the cylinder during the revolution of the machine. During the process of washing, the clothes are held in suspension by the water 70 in the cylinder. Upon revolution the inner edges of the blades act as a rubber or wash-board, and with the water free the dirt, which is carried away by the water being forced through the clothes at the lowest level 75 of the cylinder.

In connection with the cube is a cam lever or shift 49 which is pivoted upon the frame at 50. When this lever is swung up in the direction of the arrow indicated in Fig. 2 its 80 cam surface impinges against the cube and shifts the latter with its gear 28 out of mesh with the drive mechanism, thus allowing the cylinder to revolve independently, which process is sufficient to enable the rinsing of 85 the clothes. A section I of the cylinder is removable so that the articles to be washed can be placed therein or removed. This section is provided with separable hooks 51 and spring catches 52, the latter being operated 90 to disengage the parts by means of shift rods 53. These rods are operated by means of the thumb piece 54 to disengage the parts.

In operation, a sufficient quantity of boiling water is introduced into the cube and the 95 articles to be cleansed are properly soaped and placed within the cylinder which is then closed. The lid of the cube is shut down by means of the wheel 16 which firmly locks it and prevents the water from forcing its way 100 out. Upon turning the crank or handle the cylinder revolves in the direction of the arrows and of the thin edges of the blades and the successive planes of said blades rapidly force the water through the interstices between 105 said blades and into the cylinder. The inner edges of the blades act in the same manner as the uneven surface of a wash-board, rubbing and agitating the fabric of the clothes or articles in the cylinder and 110 freeing the dirt which is subsequently carried away by the currents of water.

In the construction shown in Fig. 9 the spaces between the blades are wider than in the preferred construction as illustrated in 115 Fig. 7. Across the interstices guards 57 in the form of wire meshing or other suitable material are placed. These guards allow the water to pass more readily between the blades than in the preferred construction 120 and at the same time prevent the clothes from entering the cube and from clogging the machine.

In accordance with the patent statutes, I have described the principle of operation of 125 my invention, together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be 130

carried out by other means and applied to uses other than those above set forth, within the scope of the following claims.

Having described my invention, what I claim as new and desire to protect by Letters Patent, is:—

1. A washing machine comprising substantially a cube case having its opposite ends horizontally journaled, a wash cylinder having its opposite heads horizontally journaled, a drive element connected with said parts to revolve them simultaneously in opposite directions, a shift adapted to throw one of said parts out of connection with said drive element and to hold said cube case stationary, and a suitable supporting frame for said parts.

2. A washing machine comprising a cube case having a mouth, a lid adapted to close said mouth, means adapted to hold said lid in said mouth, a pair of main gudgeons on said cube case, a wash cylinder in said cube case, a pair of supplemental gudgeons on said wash cylinder journaled in said main gudgeons, a drive element connected with said cube case and wash cylinder adapted to revolve them simultaneously in opposite directions and means for shifting said cube case out of connection with said drive element.

3. A washing machine, comprising, in combination, a revoluble angular case, a wash cylinder journaled in said case, a frame for supporting said parts, a plurality of blades spaced apart in the perimeter of said cylinder which are triangular in cross-section, have thin edges in advance as said cylinder revolves and substantially right angles directed inwardly and means for

revolving said cube case and cylinder simultaneously in opposite directions; whereby said right angles of said slats rub the clothes within said cylinder and the inner corners of said case and thin edges of said slats coöperating propel water into the sides of said cylinder and produce a continuous medial down current therethrough during the continuous revolving of said case and cylinder.

4. A washing machine comprising a cube case, a wash cylinder within said case, a suitable drive element connected with said case and cylinder to revolve them simultaneously in opposite directions, a lid on said case, means for clamping said lid on said case, means for throwing said cube case out of connection with said drive element, and a suitable frame for supporting said parts.

5. A washing machine comprising in combination a cube case, a pair of main gudgeons upon said case, a wash cylinder in said case, a pair of supplemental gudgeons journaled in said main gudgeons, a suitable supporting frame for said parts, a train of gears connected with said cube case and wash cylinder adapted to revolve them simultaneously in opposite directions, means for revolving said gears, and means for shifting said case out of connection with said gears, for the purposes specified.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALBERT L. KOENEKE.

Witnesses:

R. A. FISCHER,
F. G. BRADBURY.