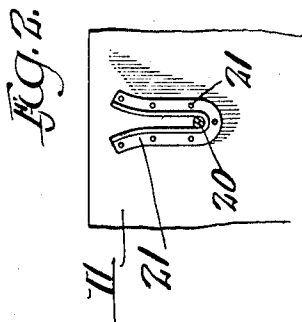
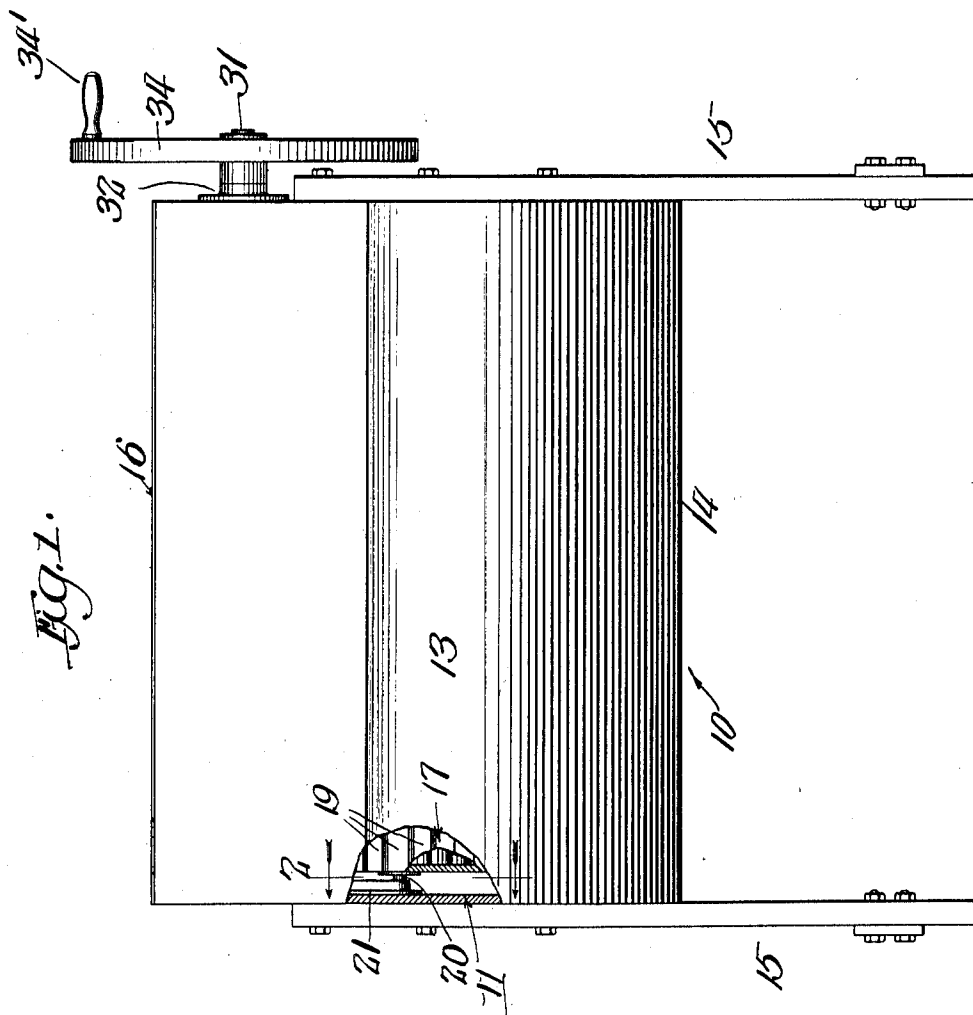


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2 SHEETS—SHEET 1.



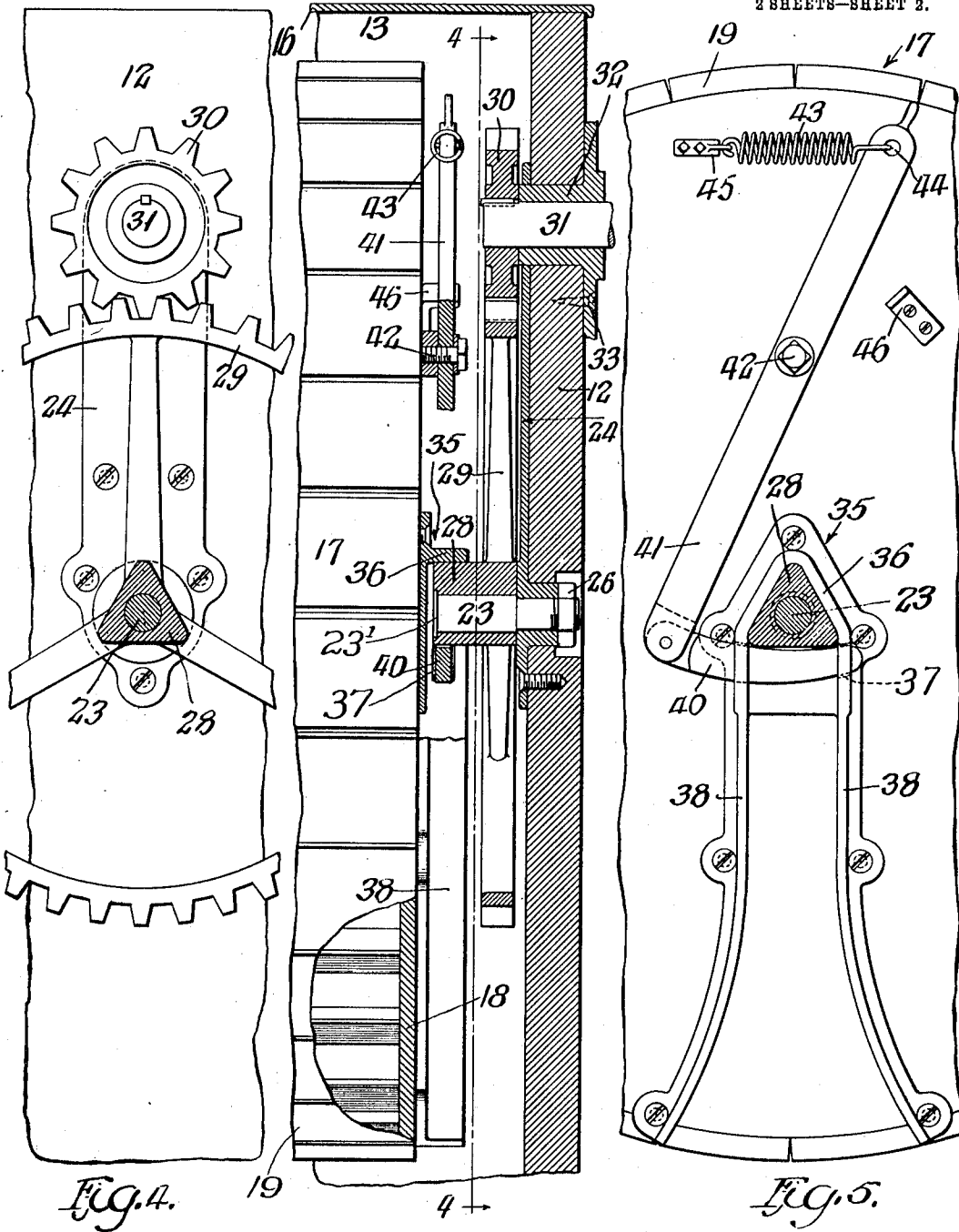
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970,030.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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JOURNAL AND BEARING.

970,030.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed September 28, 1908. Serial No. 455,027.

To all whom it may concern:

Be it known that I, ALVA J. FISHER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Journals and Bearings; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to journals and bearings especially adapted for washing and other machines and, more particularly, to that type of machines in which a cylinder is rotatably mounted in a tub or receptacle, which receptacle, in a washing machine, contains the wash water, and the cylinder being arranged to contain the clothes to be washed and having means by which the clothes are moved through and agitated in the wash water. Suitable drive mechanism is provided by which the cylinder may be rotated in opposite directions.

The invention is herein shown as applied to a washing machine of the type in which the clothes contained in the cylinder are passed through the wash water in the tub or receptacle by rotation of the cylinder in opposite directions, assisted by vanes or blades in the interior of the cylinder by which the clothes are lifted and dropped into the water to effect a thorough commingling of the water with the clothes.

In the following description specific reference is made to the elements of a washing machine but, obviously, the invention is applicable for use in other generally similar machines.

The present invention seeks to provide a simple construction for removably mounting the rotatable cylinder within the receptacle and for connecting and disconnecting it from its drive mechanism.

The invention consists in the features of improvement hereinafter set forth, illustrated in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view in side elevation with a portion of the tub and a portion of the cylinder broken away to show its construction. Fig. 2 is a detail section on line 2—2 of Fig. 1. Fig. 3 is a sectional

view of the drive member for the cylinder and of the means for detachably locking or connecting the cylinder to the drive member. Fig. 4 is a detail section on line 4—4 of Fig. 3, looking in the direction indicated by the arrows. Fig. 5 is a section on line 4—4 of Fig. 3, looking in the opposite direction.

The tub of the washing machine comprises end walls 11 and 12, side walls 13 and a curved bottom wall 14. The tub is carried by suitable legs or supports 15 secured to the end walls 11 and 12. The tub is open at its top, so that the cylinder may be placed within or removed from position for washing the tub and so that the clothes to be washed may be placed in and taken out of the rotating cylinder. Preferably, a cover 16 is provided over the open top of the tub.

The cylinder 17 may be of any suitable construction. In the form shown, it is provided with heads 18 connected by longitudinal slats 19 and provided at one portion with a removable section to permit the clothes to be inserted into and removed from the machine. A trunnion 20 is axially fixed to one head of the cylinder and this trunnion is arranged to be removably seated within an open topped U-shaped bearing 21 fixed to the end wall 11 of the tub. A rotatable driving element is journaled upon the opposite end wall 12 of the tub and suitable means are provided for detachably locking the adjacent end of the cylinder to the rotatable driving element. In the construction shown, a short stub shaft 23 is fixed upon the lower end of a brace plate 24 that is secured to the inner face of the tub wall 12. The shaft 23 has a reduced outer end portion which extends through a boss upon the lower end of the brace plate 24. This boss projects through an opening in the wall 12 of the tub and a nut 26, threaded upon the outer end of the reduced portion of the stub shaft, secures the same in position. A gear wheel 29 is rotatably mounted upon the inner end of the stub shaft 23 and is held against lateral movement by a flange 23' on the inner end of the stub shaft which engages a recess or rabbet in the inner face of the hub 28 of the gear wheel. A drive shaft 31 extends through the end wall 12 of the tub adjacent its upper end and carries a pinion 30 upon its inner end which meshes with the gear wheel

29. The shaft 31 is journaled in a bearing or bracket 32 which is secured, as by means of screws 33, to the outer face of the tub wall 12, and which bearing extends through an opening in the end wall and also through a hole in the upper end of the brace plate 24. Any suitable means may be provided for operating the drive shaft, such, for example, as a fly wheel 34, having a handle 34' or the shaft 31 may be motor driven.

Suitable means are provided for detachably locking the adjacent end of the cylinder 17 to the drive gear 29 and, for such purpose, one of these parts is provided with a polygonal projection, and the other with a correspondingly shaped socket that is open at one side to engage the projection and suitable means are provided for releasably locking the socket to the projection. Preferably, the socket is fixed to the end wall of the cylinder and the hub 28 of the gear 29 projects inwardly to be engaged thereby. As shown, the inwardly projecting hub 28 of the gear is triangular in outline, and the socket member 35, which is fixed to the end wall of the cylinder, is provided with a V-shaped flange 36 which is open at one side to fit over the projecting hub 28 and snugly engage two of the faces thereof. The socket member 35 is also provided with extension flanges 38 which extend from the flanges 36 outwardly to the edge of the cylinder. The outer portions of these flanges are inclined away from each other or flared so that in inserting the cylinder into the tub, the socket member will be readily guided into position upon the hub 28.

The socket member is locked to the polygonal hub or projection 28 by means of a key 40 which has a guiding engagement with the walls or flanges of the socket member and which preferably extends through openings 37 in the opposite side walls or flanges of the socket. As stated, the V-shaped portion of the socket is arranged to engage two of the faces of the triangular hub, while the locking key extends across the open side of the socket and engages the other face of the triangular hub or projection 28. The key is pivotally mounted, as shown, upon the lower end of a lever 41 which is pivoted intermediate its ends by a bolt 42 to the end wall of the cylinder. One end of a spring 43 engages an eye 44 in the outer end of the lever 41 and the opposite end of the spring is fixed to a lug 45 fastened to the end of the cylinder. The arrangement is such that the pull of the spring 43 forces the key 40 to its locking or operative position. This key is tapered, as shown, so that the spring 43 forces it through the openings 37 and snugly into engagement with one of the faces of the triangular hub 28. By this means lost play and wear between the hub or projection 28

and the socket 35 will be taken up and the parts held snugly in engagement. To remove the cylinder, the operator will rotate it to the position shown in the drawings and then, by shifting the upper end of the lever 41, will withdraw the key 40 so that the cylinder may be lifted from the tub when the cover 16 is lifted. It can, of course, be readily replaced in position, by similarly withdrawing the key 40 and, when in position, may be securely locked into engagement with the drive gear by means of the key 40. A stop 46 fixed to the end wall of the cylinder limits the throw of the lever 41 and prevents the complete disengagement of the key 40 from the socket.

With the improved arrangements set forth, the cylinder may be readily taken out of the tub when the parts of the machine are to be cleaned and it can also be readily placed in position and detachably locked into engagement with its drive gear. The improved arrangement also renders it unnecessary to disconnect the drive gears, as in prior constructions. These gears are permanently mounted in position on the machine and remain in mesh with each other, and it is not necessary to slide either one of the gears in axial direction out of mesh in order to remove the cylinder from the tub. For this reason also, with the present improvement, the size of the cylinder for a given size tub may be considerably increased. The brace plate between the drive shaft and the shaft for the gear 29 holds the gear 29 and drive pinion 30 properly in mesh and prevents them from getting out of line and so increasing the friction between them and the power necessary to operate the machine.

It is obvious that numerous changes may be made in the details set forth without departure from the essentials of the invention.

I claim as my invention:—

1. A journal bearing embracing a journal member, a bearing member, the one member being rotatable with reference to the other, a socket member open at one side adapted to embrace one of said members, and being removable therefrom in a direction at right angles to the longitudinal axis of said journal member, and means for locking said member embraced by the socket member in position.

2. A journal bearing embracing a journal member, a bearing member, the one member being rotatable with reference to the other, and one member being provided with a part which is polygonal in cross-section, a socket member open at one side adapted to embrace said part, and being removable therefrom in a direction at right angles to the longitudinal axis of said journal member, and means for locking said polygonal part in said socket member.

3. A journal bearing embracing a journal member, a bearing member, the one member being rotatable with reference to the other and being provided with a part which is polygonal in cross-section, a socket member open at one side, adapted to embrace the polygonal part of said rotatable member and being removable therefrom in a direction at right angles to the longitudinal axis of said journal member, a locking device for locking said rotatable member in said socket member, and lock operating means having a fixed relation with said socket member.

4. A journal bearing embracing a journal member, a bearing member, the one member being rotatable with respect to the other and having a part which is polygonal in cross-section, a socket member open at one side adapted to embrace the said polygonal member and being removable from said rotatable member in a direction at right angles to the central axis of said rotatable member, and locking means rotating with said rotating member adapted to lock said rotatable member in said socket.

5. A journal bearing embracing a fixed journal, a rotatable hub having bearing on said fixed journal, said hub being of polygonal cross-section at one end, a rotating socket member open at one side adapted to embrace the polygonal end of said hub, said socket member being removable from said hub in a direction at right angles to the axis of said hub, and a tapered key having guiding engagement with said socket member adapted to lock said hub within said socket member.

6. A journal bearing embracing a fixed

journal, a rotatable hub having bearing on said fixed journal, said hub being of polygonal cross-section at one end, a rotating socket member open at one side adapted to embrace the polygonal end of said hub, said socket member being removable from said hub in a direction at right angles to the axis of said hub, a tapered key having guiding engagement with said socket member adapted to lock said hub within said socket member, and a spring controlled lever with its axis of oscillation in fixed relation to said socket member constructed to operate said key.

7. A journal bearing embracing a fixed journal a rotatable hub bearing thereon, said hub being triangular in cross-section at one end, a socket member provided with a V-shaped open sided socket adapted to embrace the triangular end of said hub, divergent guiding flanges having fixed relation with said socket member acting as guides to the open side of said socket, a tapered key having guiding engagement with said flanges adapted to engage the unengaged side of the triangular hub end, and a spring controlled lever adapted to operate said key, said lever having its axis of oscillation fixed in relation to said socket member.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 5th day of September A. D. 1908.

ALVA J. FISHER.

Witnesses:

W. L. HALL,
GEORGE R. WILKINS.