

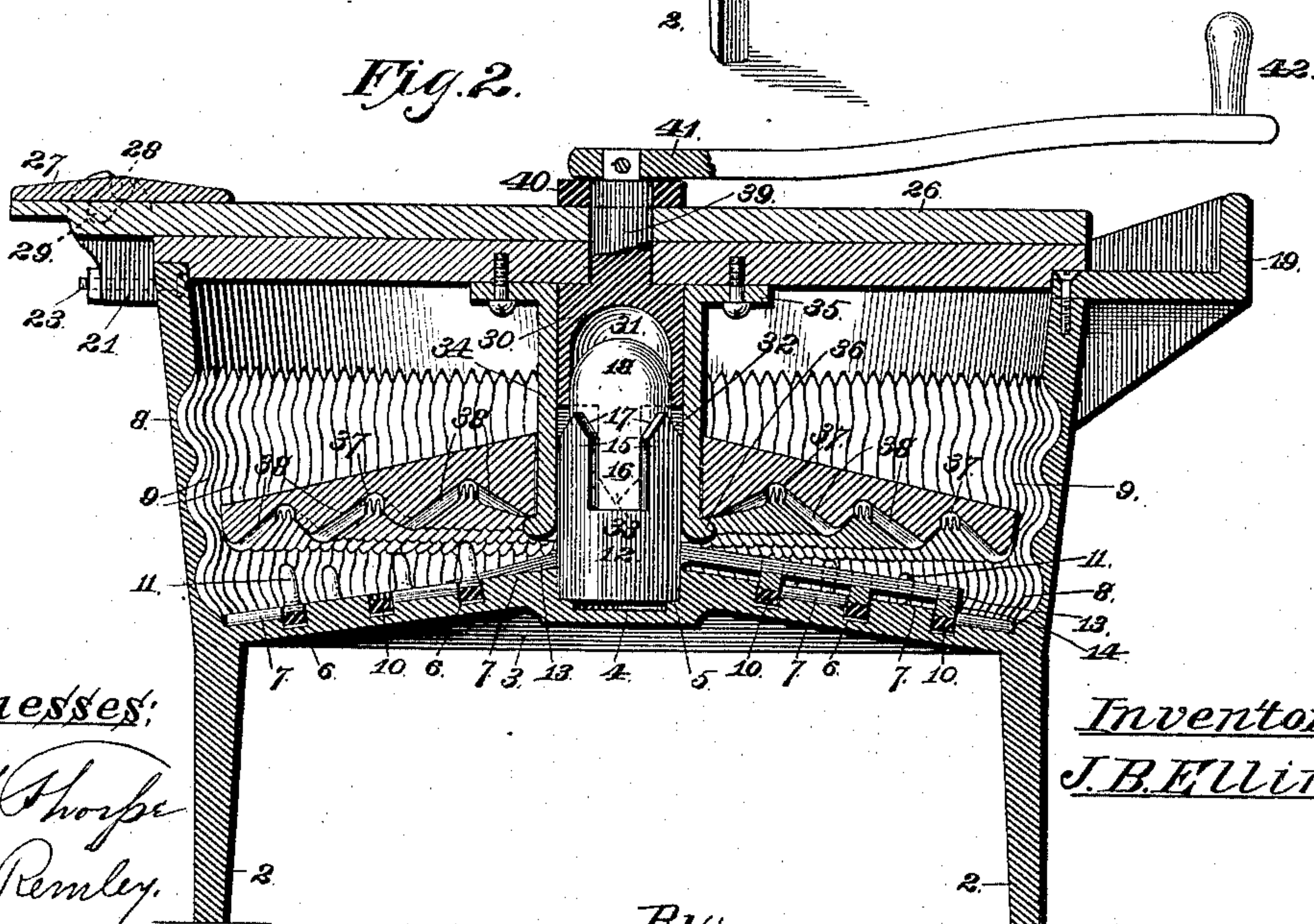
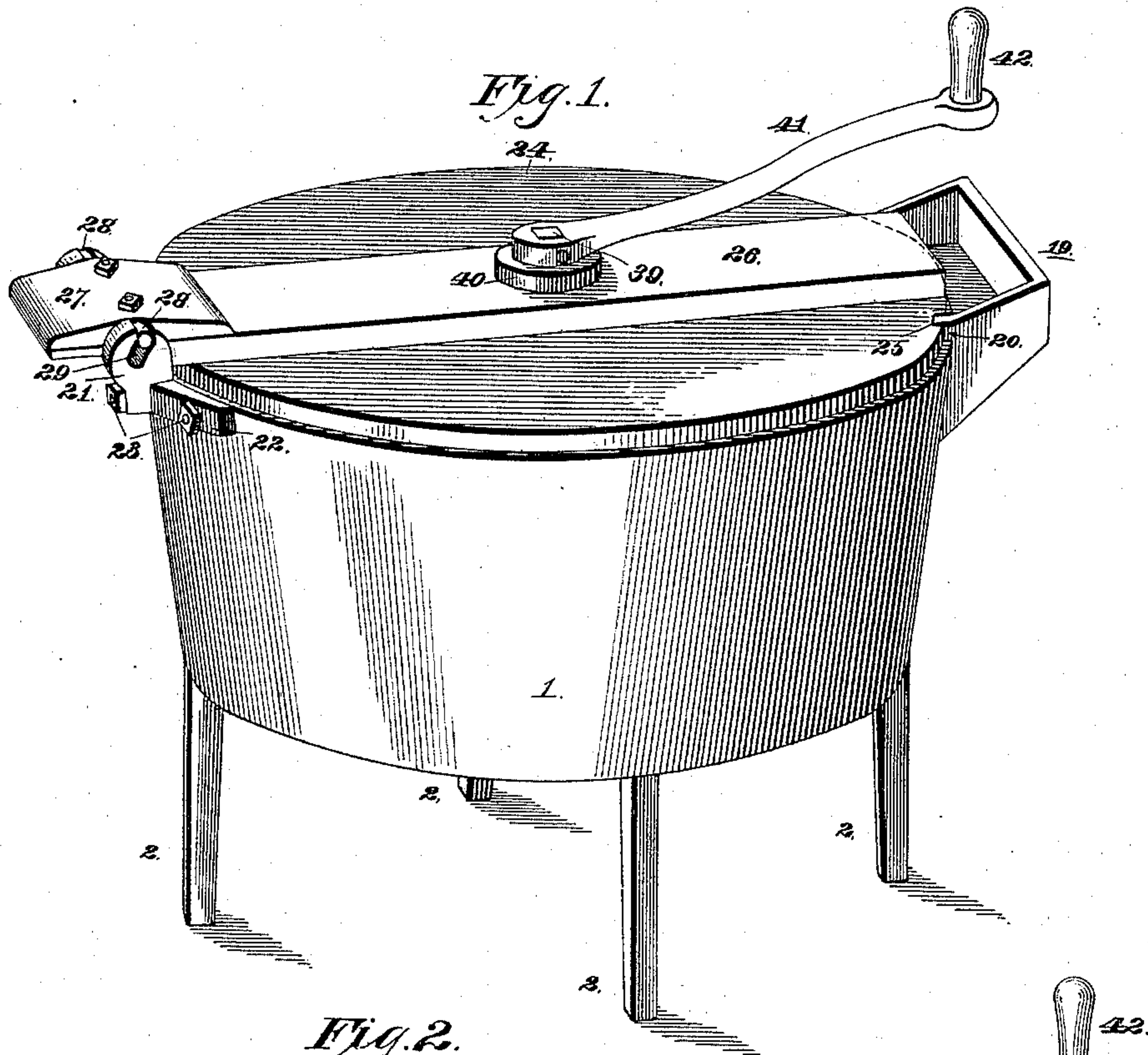
(No Model.)

2 Sheets—Sheet 1.

J. B. ELLING.  
WASHING MACHINE.

No. 537,820.

Patented Apr. 23, 1895.



*Witnesses:*

*G. F. Thorpe*  
*M. R. Remley*

*Inventor:*  
*J. B. Elling*

*By:*  
*Higdon & Hyman Attys.*



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2 Sheets—Sheet 2.

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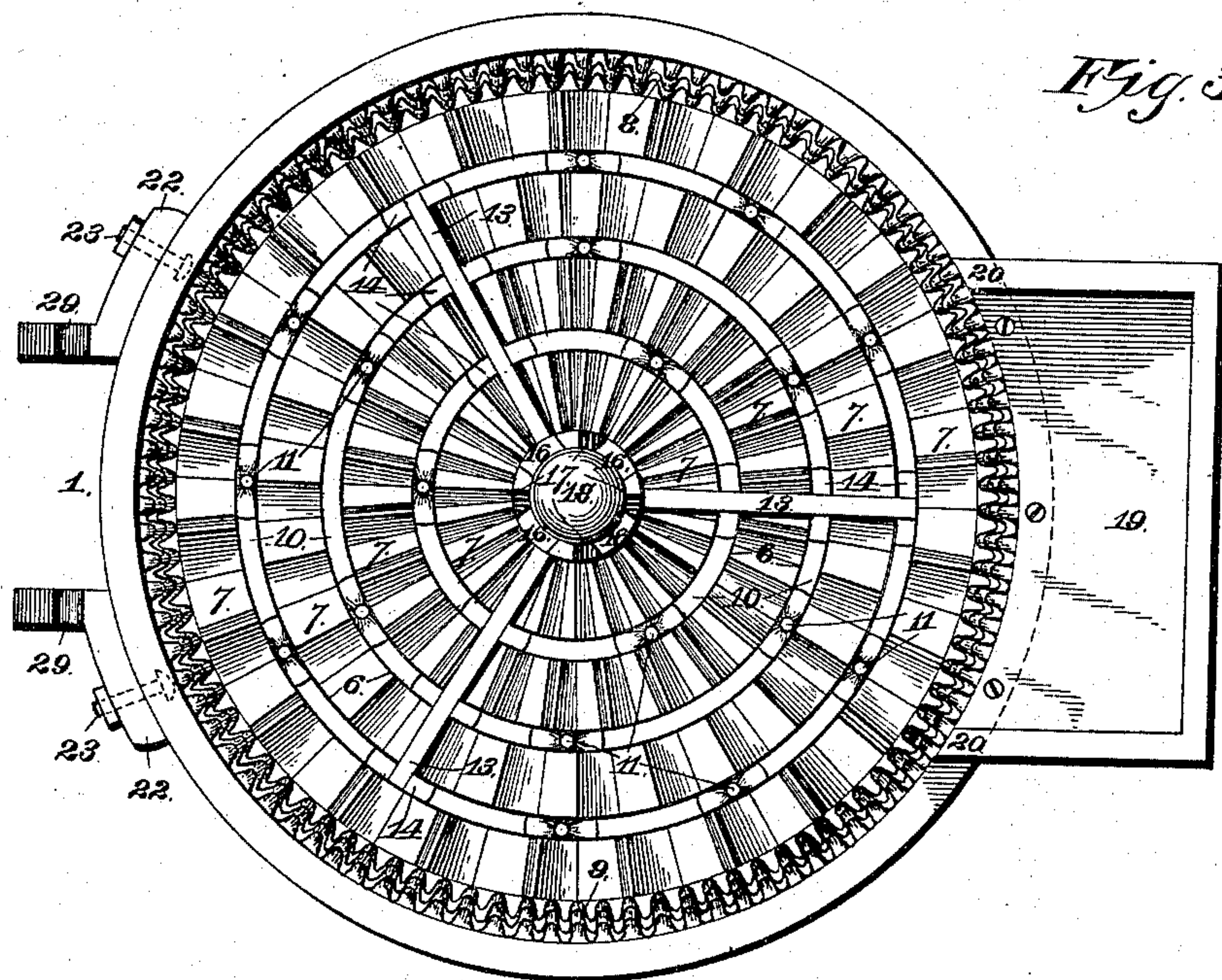


Fig. 3.

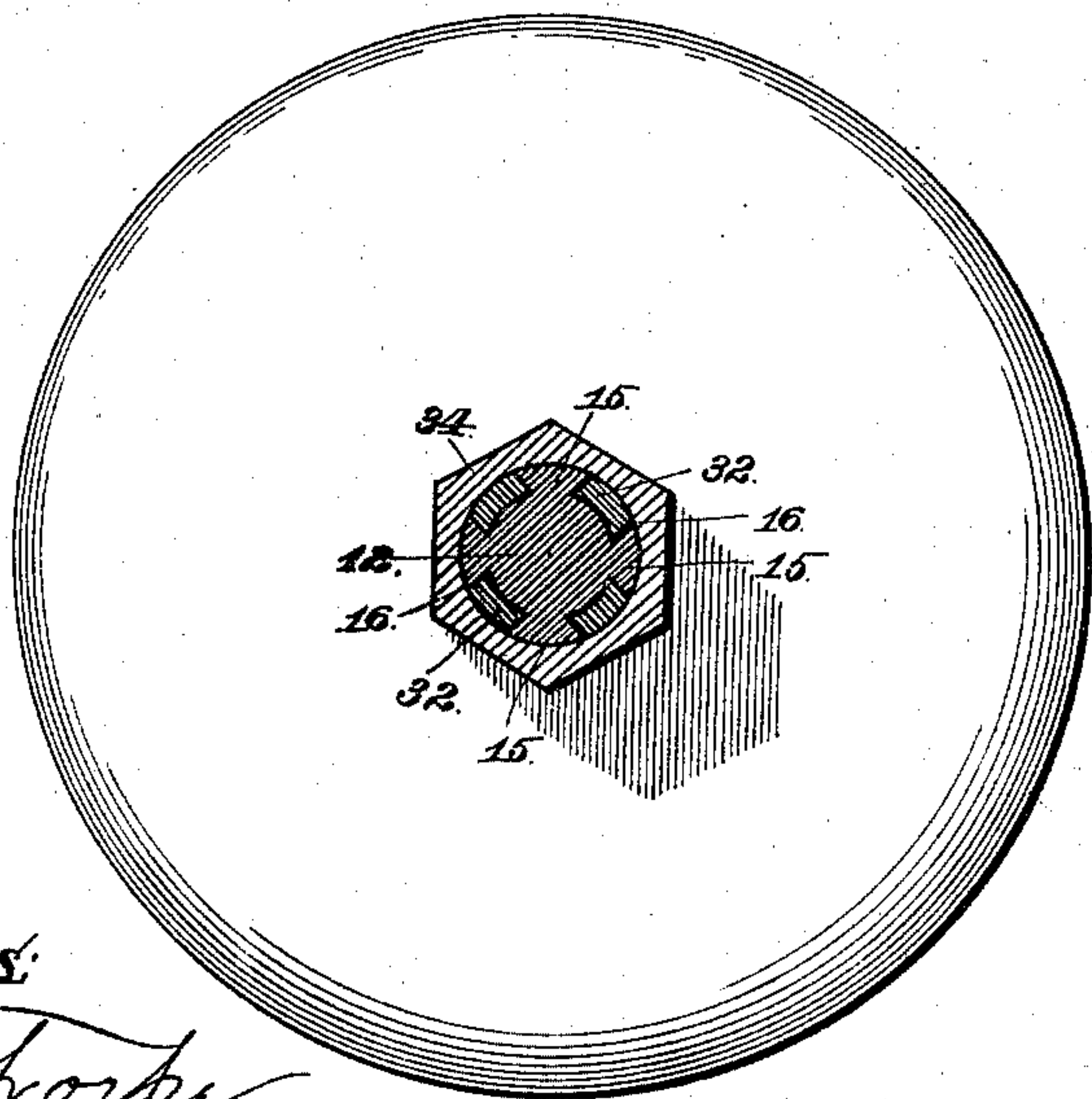


Fig. 4.

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G. F. Trope.  
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Inventor:

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By: Higdon & Higdon  
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# UNITED STATES PATENT OFFICE.

JOSEPH B. ELLING, OF KANSAS CITY, MISSOURI.

## WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 537,820, dated April 23, 1895.

Application filed August 20, 1894. Serial No. 620,745. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH B. ELLING, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Washing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to washing machines, and the object of my invention is to produce a machine of this character, which is effectual in operation, easy of manipulation, and simple, strong, and inexpensive of construction.

With this object in view, the invention consists in certain novel and peculiar features of construction and combinations of parts, as hereinafter described and claimed.

In order that the invention may be fully understood, reference is to be had to the accompanying drawings, in which—

Figure 1 is a perspective view of a washing machine embodying my invention. Fig. 2 is a central vertical sectional view. Fig. 3 is a plan view of the same, with the cover and the upper frictional surface or rubber removed. Fig. 4 is a horizontal sectional view of the engaging clutch-sections, the sleeve embracing the same, and the upper friction surface or rubber carried by the said sleeve.

In the said drawings, 1 designates the receptacle proper, which is preferably tub-shaped, and is mounted upon legs 2. The bottom of this receptacle or tub is formed slightly conical, and is provided with a vertical and central cylindrical cavity or recess 4 in its upperside, and said recess or cavity is diminished diametrically at a suitable point, so as to form the annular and horizontal shoulder 5, for a purpose hereinafter explained. The conical bottom is also provided with a series of circular grooves 6 in its upper side, which are arranged concentric to the axis of said cylindrical cavity, and is also radially corrugated or grooved, as shown at 7. The inner side of the tub is also horizontally and annularly corrugated, as shown at 8, and vertically corrugated or ribbed as shown at 9. A series of rings 10, of leather or any other suitable material, occupy the grooves 6, but do not frictionally engage the walls thereof, and projecting vertically upward from each of said rings are the rounded arms or pins 11.

The lower member 12 of the clutch-sections hereinbefore referred to, is cylindrical in form, and fitting vertically within the cavity 4, rests upon the annular flange 5, thereof, at its lower end, and thereby provides a much smaller frictional surface than would be provided if the lower clutch-section rested directly and squarely upon the bottom of said cavity; and by thus reducing the frictional contact to the minimum, less exertion is required to rotate said clutch-section. Projecting radially outward from said clutch member, are the arms 13, which are connected rigidly to the rings 10, through the medium of the blocks 14, in any suitable manner. This clutch-member is also reduced so as to form the alternating ribs and recesses 15 and 16, respectively, and said ribs are beveled to a point at their upper ends, as shown at 17, for a purpose hereinafter explained, and the upwardly projecting and cylindrical guide-stud 18, which is formed semi-spherical at its upper end.

Secured to one side of the receptacle or tub, is the wringer-supporting attachment 19, the bottom and inner margins of which lie flush with the upper margin of the tub and the inner side thereof, respectively, and the side-walls of said attachment are extended inwardly and project a suitable distance beyond the upper surface of the tub, as shown at 20, so as to form guide-extensions, as hereinafter referred to. A pair of oppositely disposed lugs 21 are arranged against the tub and diametrically opposite from the attachment 19, and are provided with laterally projecting arms 22, which fit against the outer side of the tub at its upper margin, and these lugs and arms are secured rigidly in such position by means of the bolts 23, which are engaged at their projecting ends by ordinary retaining-nuts.

The cover 24 of the tub is provided with a pair of notches 25, one only of which is shown, and these notches are adapted, when the cover is in operative position, that is, when closing the upper end of the tub, to engage the extensions 20 of the side-walls of the ringer, and also to assist in guiding the cover to its proper position when being closed, by engaging said extensions. Extending diametrically of the upper side of the cover, is the bar or plate 26,



and secured upon the upper side of the same and at one end, by bolts or any other suitable means, is a plate 27, and this plate is provided with the oppositely projecting trunnions 28, which engage the hinge-slots 29 formed in the lugs 21, and concentric or approximately so to the adjacent portion or margin of the cover. These hinge-slots are provided and thus arranged so that in raising and lowering the cover and the upper friction surface or rubber carried thereby, the same will not come in contact with the opposite side of the tub, because the trunnions 28 occupy the lower end of said slots, and only occupy the upper end of said slots when the cover is in its closed position, as shown in the drawings. If the hinge-point or pivot was fixed or permanent, it will be apparent that the cover and the said friction surface or rubber could not be freely and easily moved to and from position. The upper clutch-member or section 30 is provided with a cylindrical cavity 31, which is rounded at its upper end to correspond with the upper end of the guide-stud 18, and is provided with a series of vertically depending arms 32, which are adapted to engage the recesses 16 of the lower clutch-member, and these depending arms are pointed at their lower ends as shown at 33, so as to constitute guide-arms, that when lowered, no matter at what point they engage with the similarly pointed ribs 15, will be deflected to one side or the other and will engage the corresponding recess 16, as will be understood. The sleeve 34 is cylindrical internally and fits snugly around the upper clutch-member 30 at all times, and around the lower clutch-member when the cover of the machine is down, and this sleeve is angular in cross-section, being preferably in the form of a hexagon, as shown in Fig. 4, and projecting outwardly and horizontally from the upper end of said sleeve, is a flange 35, which is secured in any suitable manner to the under side of the cover, and projecting outwardly at the lower end of said sleeve, is the annular flange 36. The upper friction surface or rubber corresponds marginally to the form of the receptacle 1, and in this instance is circular or in the form of a disk, and is provided with a central hexagonal opening embracing non-rotatably the sleeve 34, and supported upon and by the annular flange 36, at the lower end thereof. This disk is also provided at points vertically above the arms or pins 11, carried by the rings 10, with a corresponding series of concentric grooves 37, and the under surface of the same between said grooves is radially corrugated or ribbed, so as to form the upper friction surface proper. It will be apparent from this arrangement, that the said upper friction surface is non-rotatable, but is free to move vertically upward and downward upon the sleeve 34. In order to operate or rotate the upper clutch member, it is provided centrally with the vertical and upwardly projecting cylindrical stud 39, which engages circular apertures or open-

ings in the center of the cover and of the bar or plate 26, and projects through the washer 40, of leather or other suitable material, and mounted rigidly upon the upper end of said stud, which is preferably formed rectangular, is a lever or arm 41, which is provided with the upwardly projecting crank-handle 42 at its upper end.

In operation, the cover is raised, and thereby moves out of the tub the upper frictional surface or rubber also. The water is then introduced, and the clothes placed also within the tub. The cover is now moved downward to its operative position, and thereby causes the upper friction surface or rubber to come in contact with the upper portion of the clothes in the tub, and this friction surface or rubber, being of suitable weight, presses down firmly upon the same, and is at the same time automatically adjusted vertically upon the sleeve 34 according to the quantity of clothes within the tub, as will be understood. In moving the cover to its operative position, the sleeve 34 embraces the upper portion of the lower clutch-section, and the said clutch-sections engage one with the other, as before explained. The crank-handle is now grasped and the lever operated, and this operation causes, through the medium of said clutch-members, the rotation of the rings 10 within the grooves 6, and the consequent rotation of the clothes between and against the upper and lower frictional surfaces, because said arms 11 penetrate into the mass of clothes for a suitable distance and grasp the same firmly, as will be understood. It will be apparent from this construction that owing to the weight of the water-saturated clothes and the upper friction surface bearing upon the same, it will be impossible in the operation of the machine for the arms 11 to slip and allow the clothes to remain stationary and not receive the required rubbing. It will be apparent also in this operation, that the clothes also frictionally engage the corrugated side of the tub, and that by forming the upper and lower friction surfaces in cross section slightly converging toward their inner ends, the clothes will be frictionally engaged in the operation at the inner as well as the upper and lower and outer sides.

While I have shown this tub as corrugated internally only, it is to be understood that I contemplate manufacturing the same of corrugated sheet metal of suitable strength, and that I do not wish to confine myself to the friction surfaces as described and illustrated, because any suitable roughened surface that will afford frictional resistance to the rotation of the clothes within the tub, will be an equivalent of the construction herein shown and described.

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

1. In a washing machine, the combination with a suitable receptacle internally rough-



ened, of rotatable clutch-sections detachably engaged, a sleeve surrounding said clutch-sections, and an upper friction-surface mounted non-rotatably upon said sleeve, substantially as set forth.

2. In a washing machine, the combination with a suitable receptacle internally roughened, and a cover therefor, of rotatable clutch-sections detachably engaged, an upper sliding and non-rotatable friction surface, which is opposed to the friction surface formed by the roughened surface of the tub or receptacle, and means to rotate the clothes between said friction surfaces, substantially as set forth.

3. In a washing machine, the combination with a suitable receptacle or tub, a cover therefor, and a non-rotatable upper friction surface, of detachably engaged rotatable clutch-sections, arms or pins projecting upwardly from the bottom of the receptacle or tub and suitably guided and connected with one of said clutch-sections, and means to rotate the same, substantially as set forth.

4. In a washing machine, the combination with a receptacle or tub internally roughened, and provided with a central bearing cavity and with circular grooves concentric therewith, a cover for said receptacle or tub, and a non-rotatable upper friction surface which is opposed to the lower friction surface formed by the roughened bottom of the receptacle or tub, and corrugated to form annular grooves over the circular grooves in the bottom of the receptacle or tub, of engaging clutch-sections, one of which is mounted in said bearing cavity

in the bottom of said receptacle or tub, arms projecting radially from said clutch-section, rings carried by said arms, and engaging the concentric guide-grooves in the bottom of the receptacle or tub, arms or pins projecting upwardly from said rings, and means to rotate the clutch-sections, substantially as set forth.

5. In a washing machine, the combination with a suitable receptacle or tub, which is provided with a conical bottom and is internally roughened, and a cover for said receptacle or tub, of a clutch-section rotatably carried by said cover, and recessed internally and provided with depending guide-arms, a lower clutch-section rotatably journaled in the bottom of the tub, and provided with a cylindrical stud engaging the recess of the first-mentioned clutch-section, and provided with alternate upwardly projecting ribs and vertical recesses, which arms engage between the depending arms of the first-mentioned clutch-section, arms projecting from the said last-mentioned clutch-section, rings connecting said arms, arms or pins projecting upwardly from said rings, and a lever rigidly secured to one of said clutch-sections and provided with a crank-handle, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH B. ELLING.

Witnesses:

M. R. REMLEY,  
F. G. FISCHER.