

J. C. GRANNAN.  
Washing-Machines.

No. 152,103.

Patented June 16, 1874.

Fig. 1

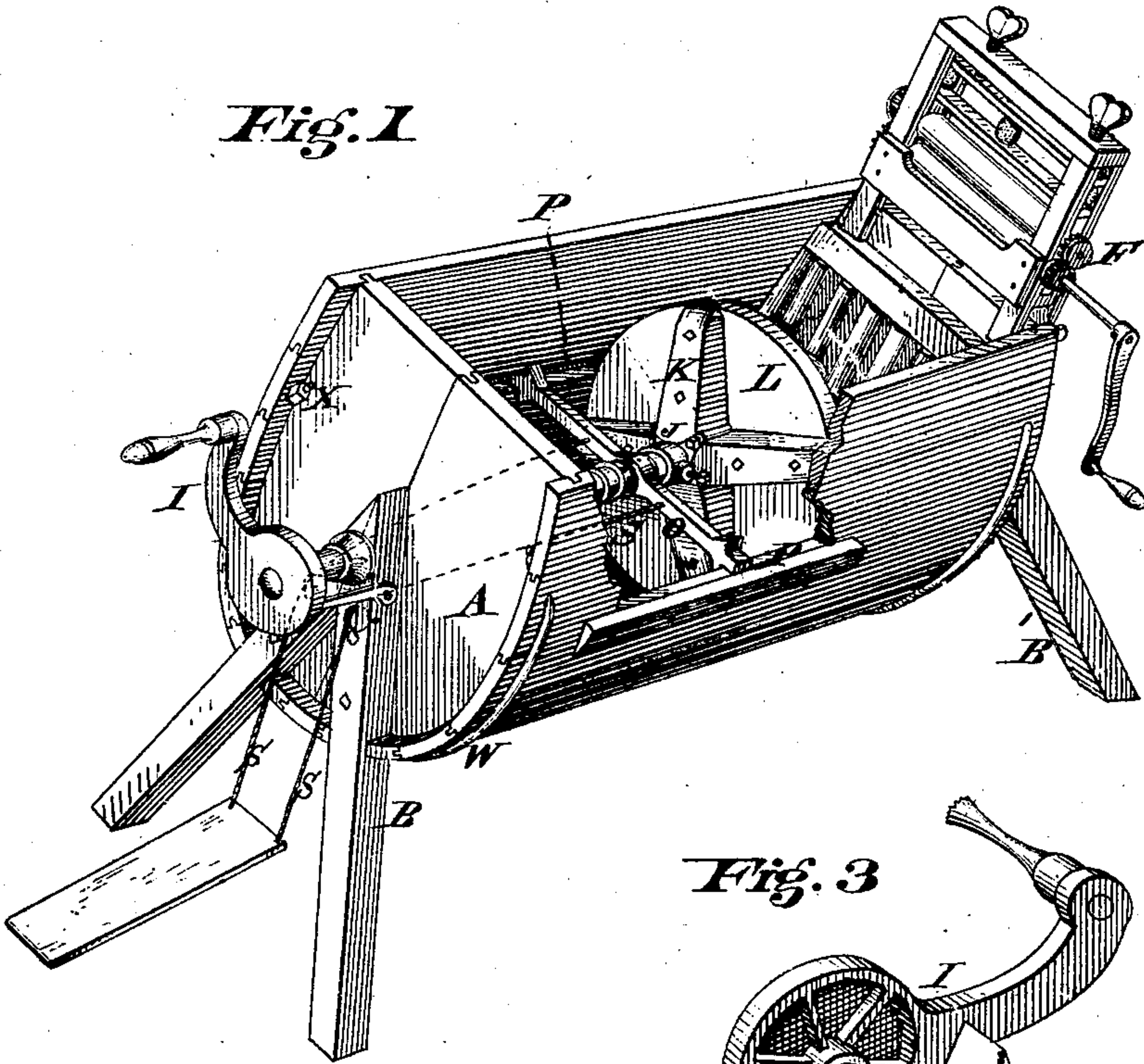


Fig. 3

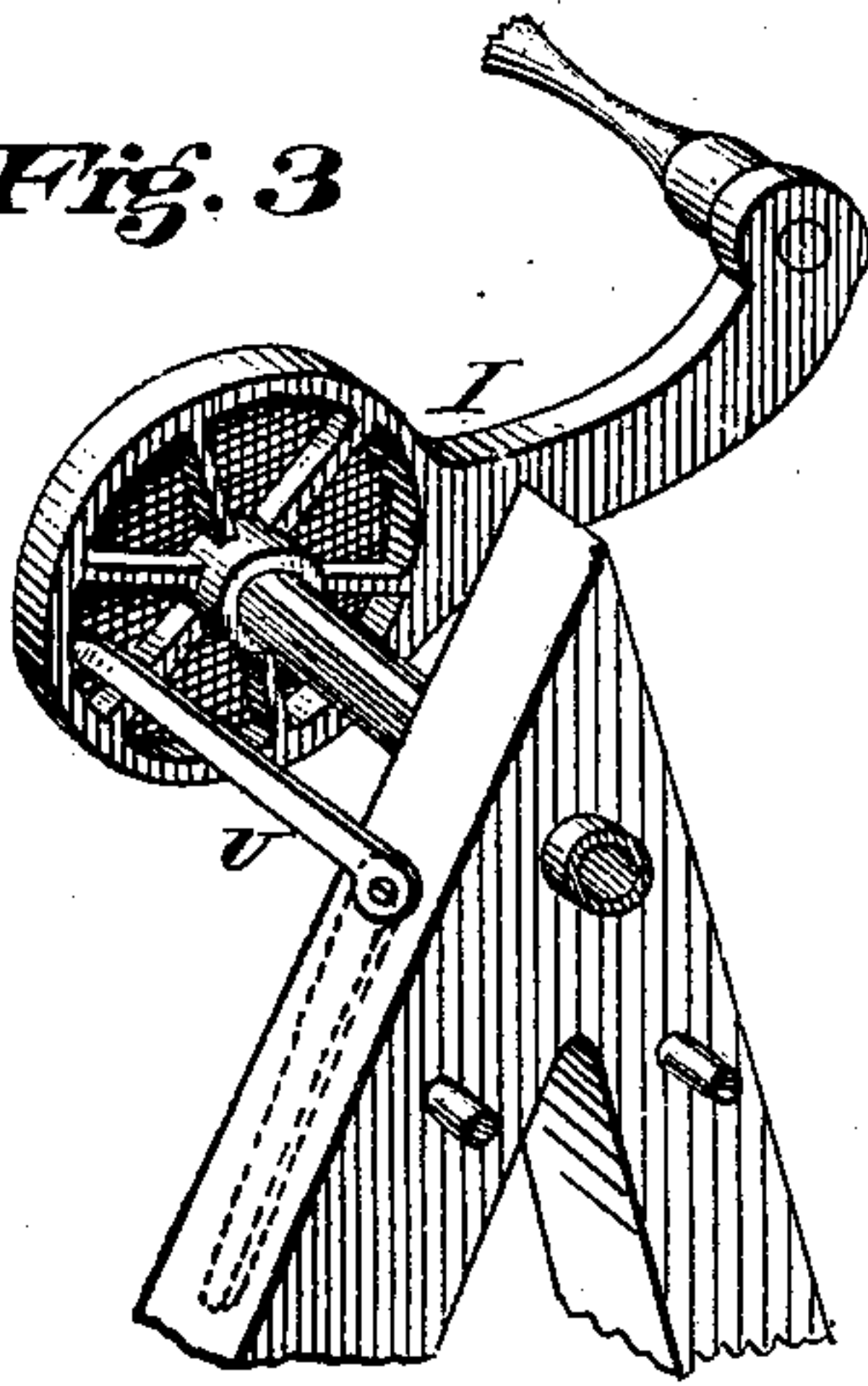


Fig. 4

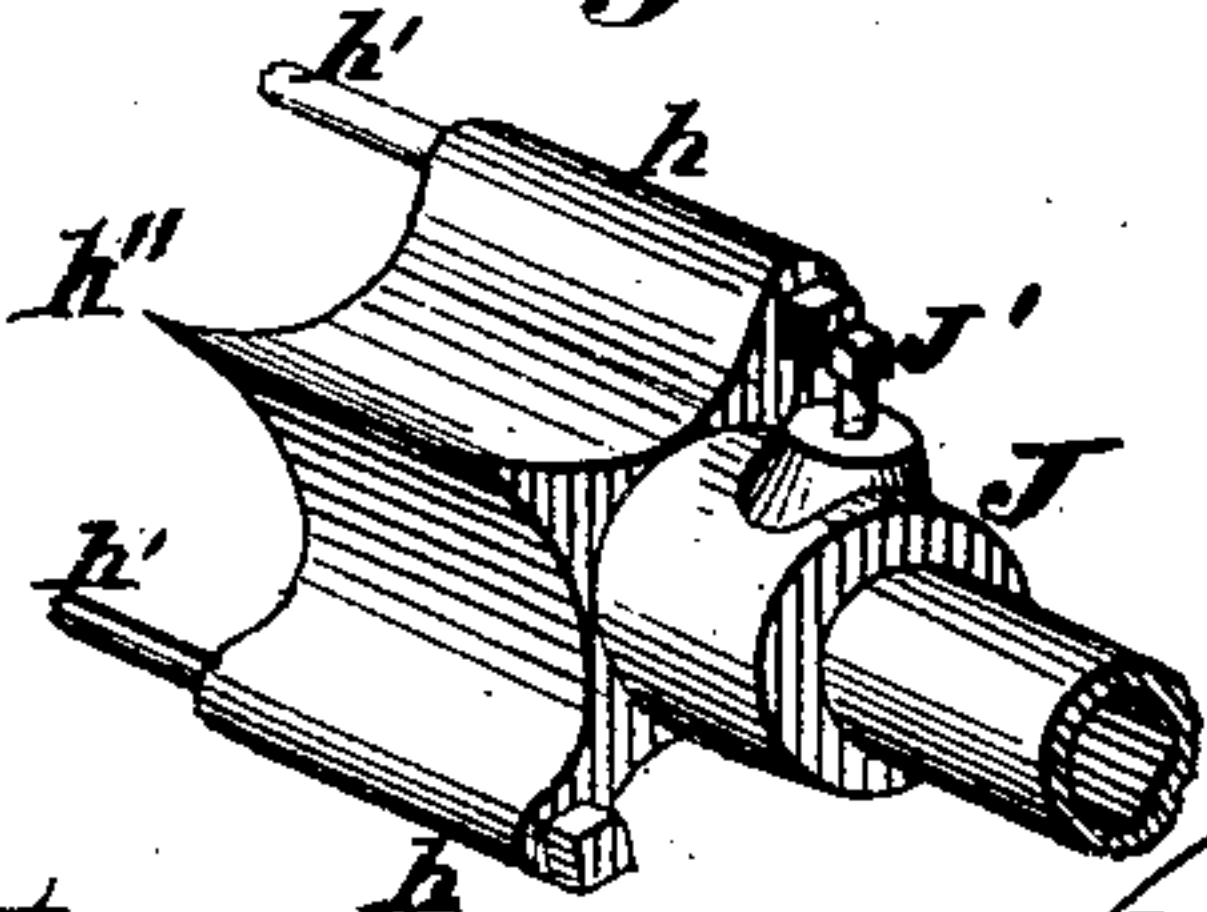
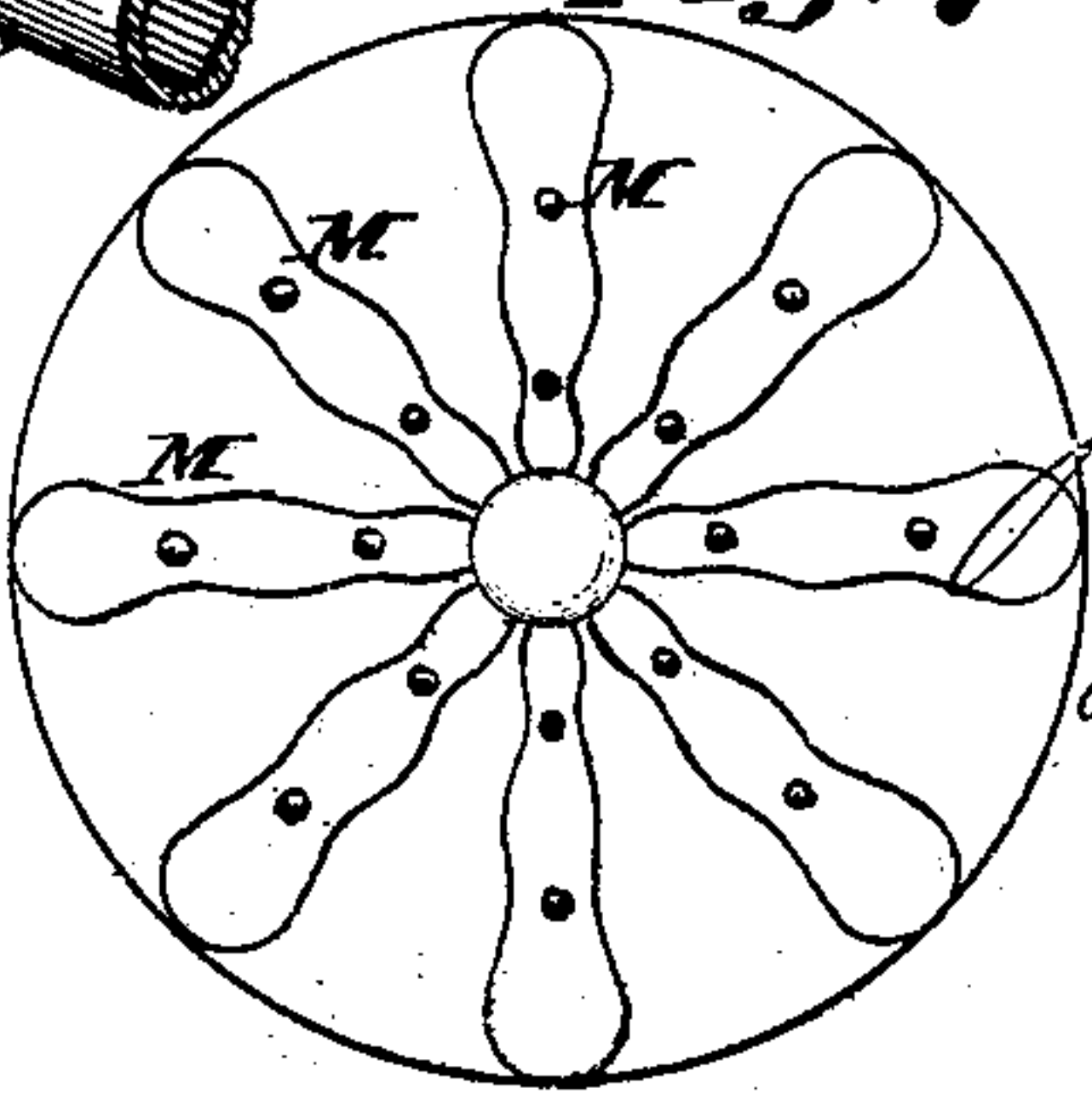


Fig. 5



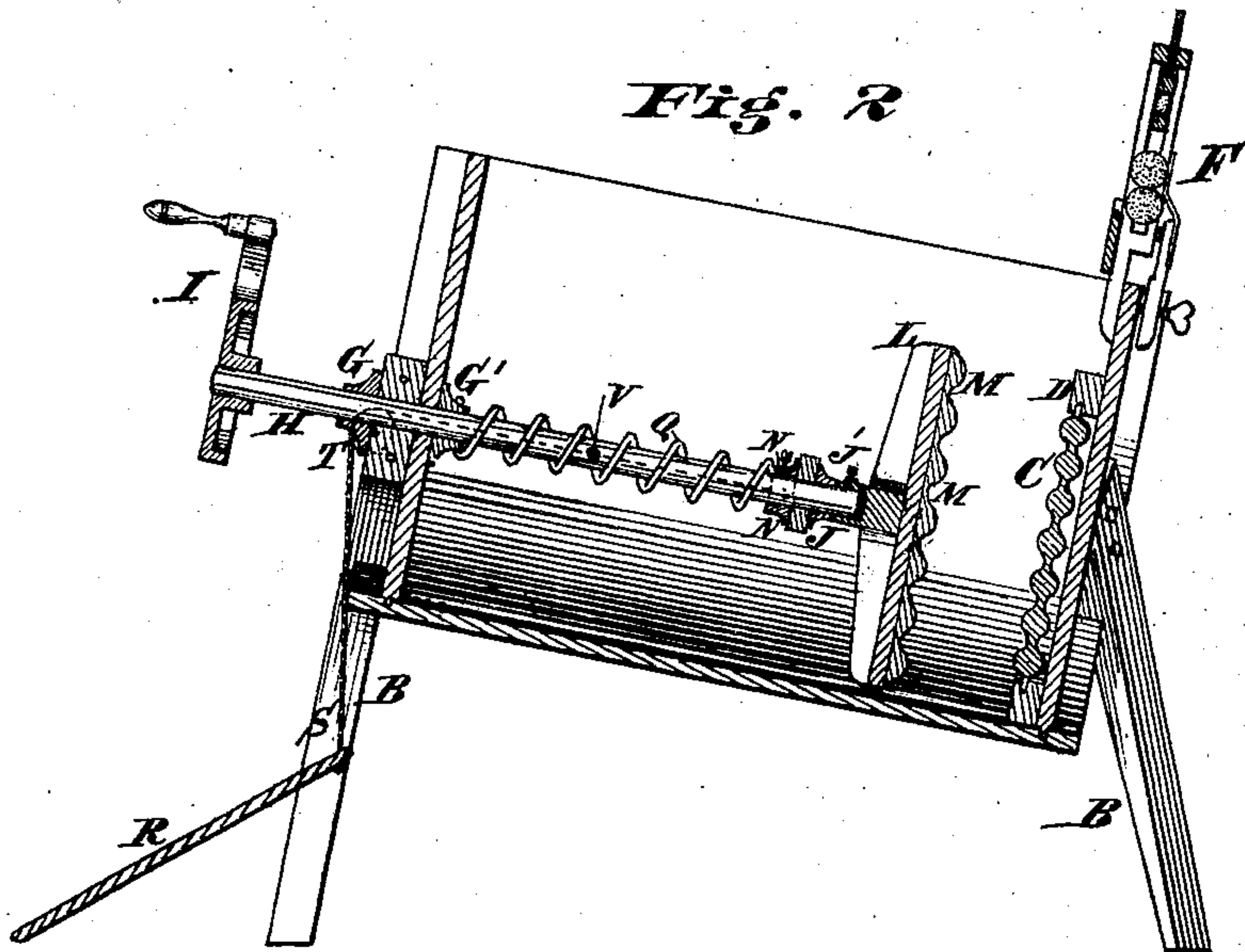
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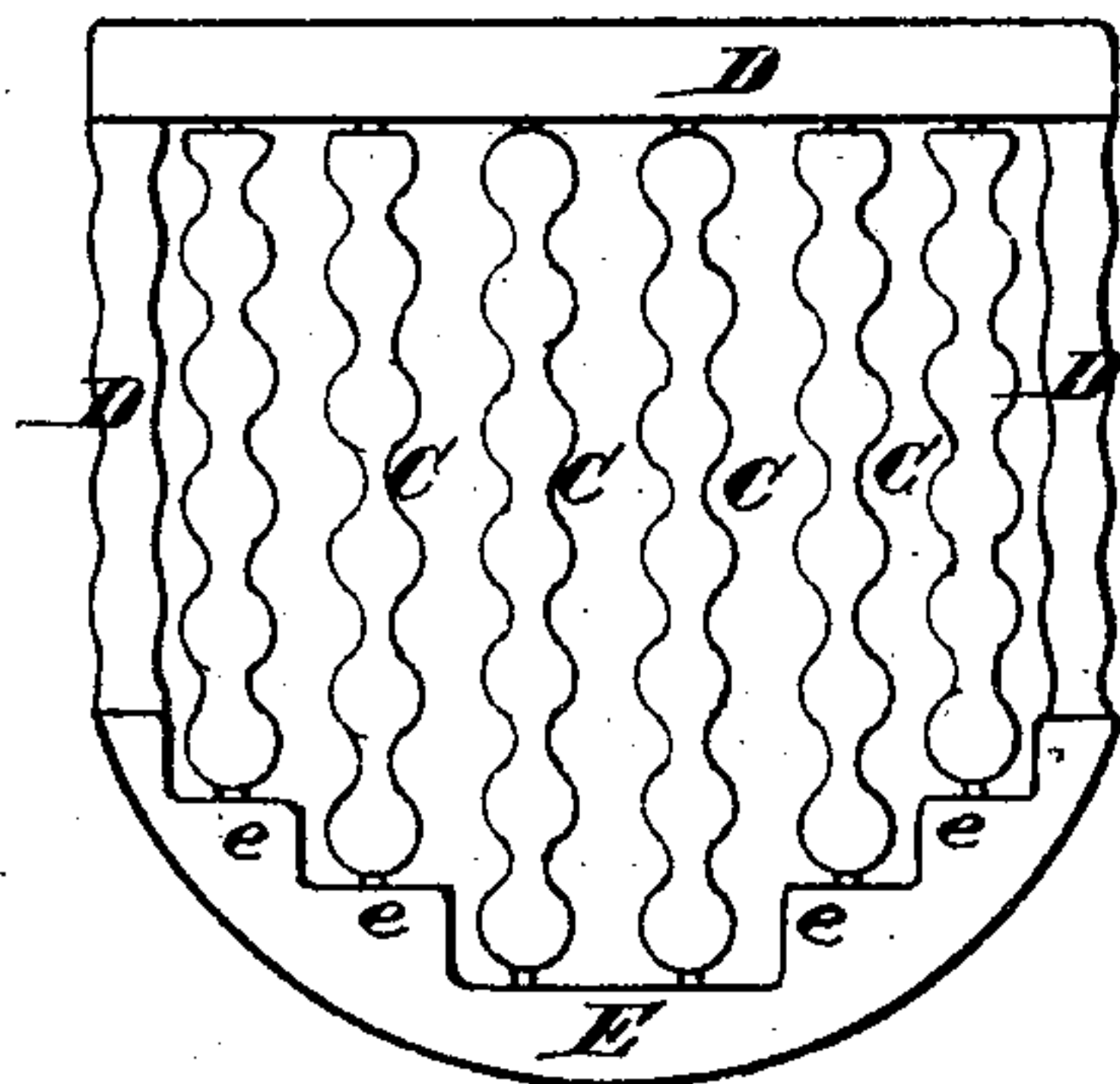
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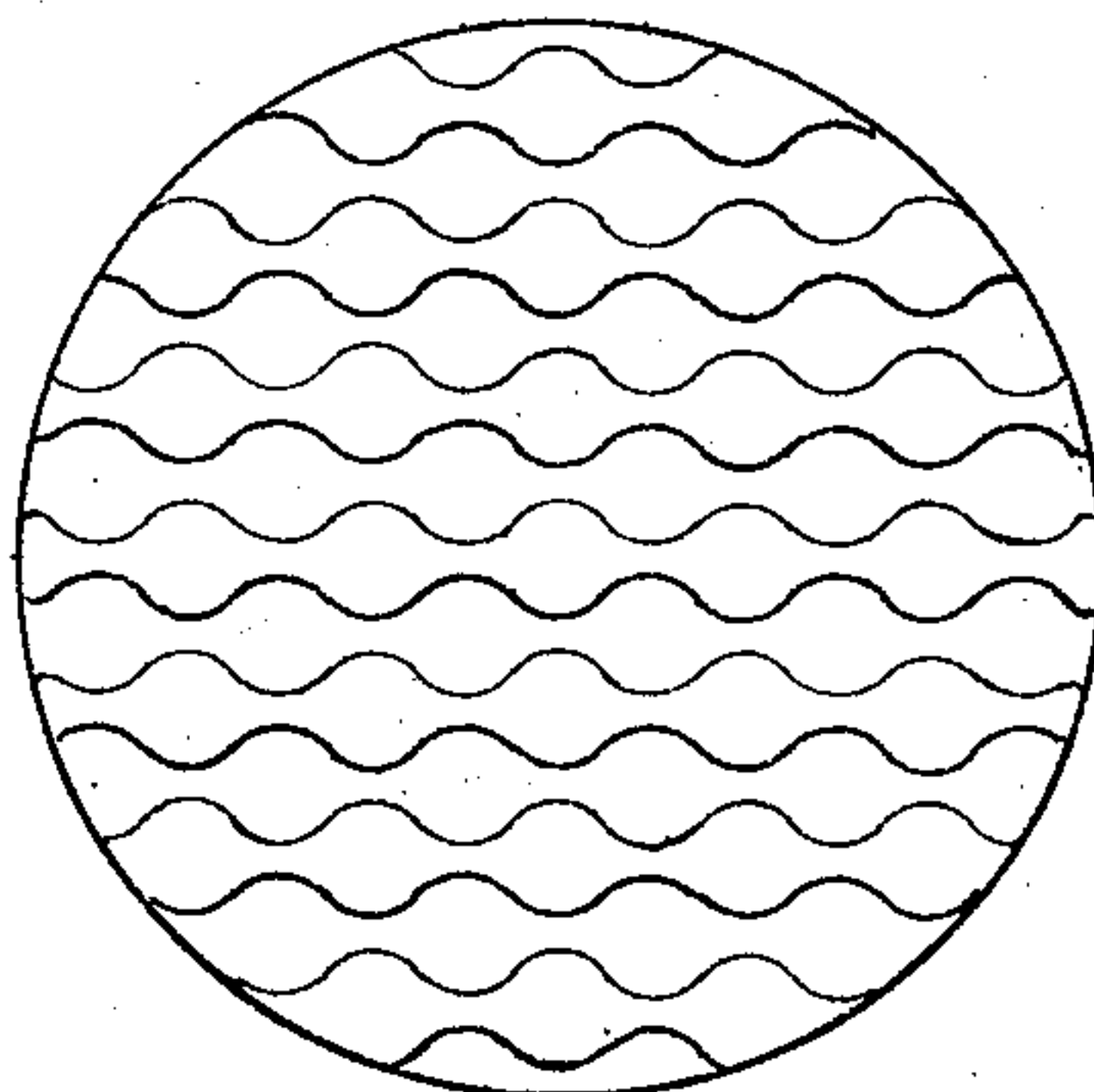
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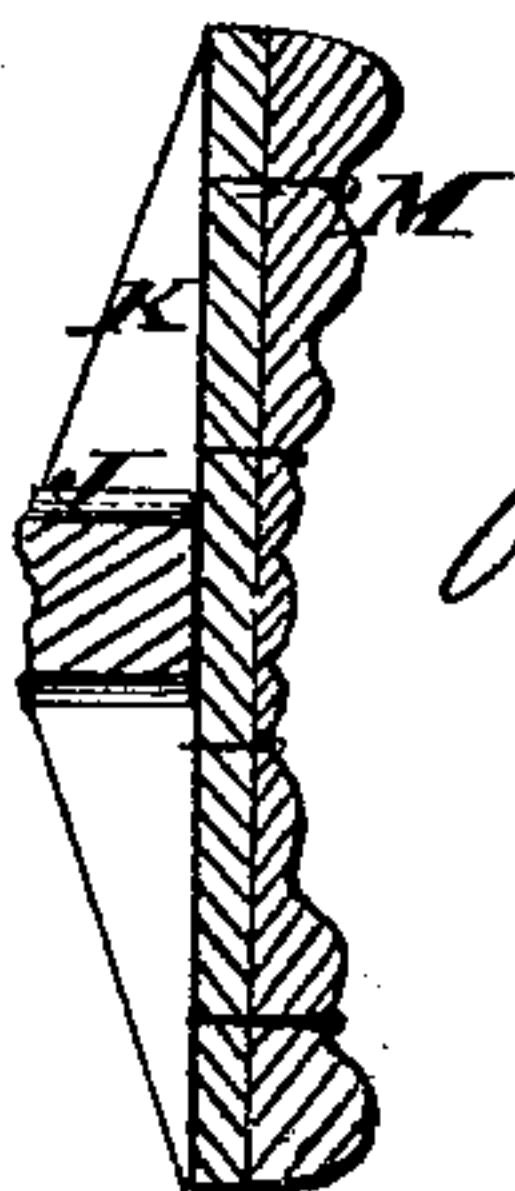
*Fig. 5*



*Fig. 6*



*Fig. 8*



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# UNITED STATES PATENT OFFICE.

JOSEPH C. GRANNAN, OF CINCINNATI, OHIO.

## IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. **152,103**, dated June 16, 1874; application filed April 2, 1874.

*To all whom it may concern:*

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

My invention relates to the class of washing-machines having an inclined rubber shaft, the head of which is made to act in conjunction with the stationary rubber head in the end of a semi-cylindrical wash-tub; and my invention consists, first, in a peculiar device which provides a journal-bearing for the support of the inner end of the shaft, permitting the necessary end movement of the shaft; second, in a peculiar construction of the hub and of the revolving head, and its connection with the revolving shaft, by which great strength and durability are secured.

Figure 1 is a perspective view of a washing-machine embodying my invention. Fig. 2 is a vertical section of the same. Fig. 3 is a detached view, showing the back of the crank-handle. Fig. 4 is a perspective view of the hub of the revolving rubber. Fig. 5 is a view of the stationary rubber frame. Fig. 6 represents a modification in the form of the revolving rubber. Fig. 7 is a face view, showing the preferred construction of the revolving rubber head, and Fig. 8 an axial section of the same, showing the concavity of the surface.

A is the tub, which, as shown, is semi-cylindrical at the bottom, and supported on legs B B', so arranged that the bottom of the wash-tub is inclined to a horizontal plane. The end of the tub which is lowest is fitted with a stationary rubber frame, Fig. 5, composed of corrugated or smooth rollers C, straight bars D, and bottom bar E, the bottom bar being formed in steps e, as shown, for the support of rollers C of unequal length, so that the ends of these rollers will, in the aggregate, form a curve which will conform to the curvature of the revolving rubber head. At this end of the wash-tub the customary clothes-wringer F may be attached. At the elevated end of the tub a journal-bearing is formed by the combination of the wash-tub frame and stationary collars G G'. In this journal-bearing a driving-shaft, H, is journaled. The shaft is preferably composed of galvanized-

iron pipe, and fitted with the customary crank-handle I, made fast to the same by set-screw or otherwise. At the inner end of the shaft the hub J is secured by set-screw J' to the shaft H, and to this hub the revolving rubber head is secured, the hub being formed with projecting arms h for the passage of the bolts h', which secure the head to the hub, the hub also being provided with projections h'', between which and the arms h concavities are formed, which receive the inner ends of the stiffening radial arms K, which are bolted to the revolving rubber head L, and serve to support the rubber head firmly against unequal strains, and keep it from warping. To the inner face of the rubber head L radial rubbers M are secured, which are semicircular in cross-section, and so shaped that collectively they form a concave surface, between which and the rubber frame, Fig. 5, the clothes are rubbed, the concavity serving in a great measure to prevent the escape of the clothes at the periphery of the rubbers. A collar, N, is secured to the shaft H, between which and the hub or collar J a journal-bearing is provided, which consists of a bar, O, perforated to receive and journal the shaft H, the ends of the bar fitting into grooves P in the sides of the wash-tub, which support the bar, (so that it may in turn support the shaft H,) the grooves also permitting the end motion of the shaft necessarily. In order to avoid the necessity of the operator being called upon to force the shaft H endwise to press the clothes, I provide a coiled spring, Q, which surrounds the shaft H and fits between the collars N G'. This spring serves to press the rubber frame L M against the clothes in the operation of washing, the operator simply being called upon to turn the crank. If desirable to simplify the machine, the crank-handle I may be relied upon to pull the rubber frame back against the action of the spring Q, for the purpose of introducing clothes between the rubbers C M, but I prefer that the treadle R, ropes S, and pulleys T, be used for this purpose, the ropes being fastened as shown in Fig. 1, to the bar O. This provision of the treadle device enables the operator, while revolving the crank I, to regulate the pressure of the rubber upon the clothes. When the

rubber frame L is drawn up to introduce or remove clothes it may be supported in this position by a prop, U, or by the insertion of a pin outside of collar G into the aperture V in the shaft. Circular rods W are used, which embrace the staves of the tub exteriorly, and extend into the interior thereof, being fastened and drawn up by nuts X. In place of these rods W hoops may be used, secured to the upper edge of the wash-tub. In place of the wooden construction of wash-tub shown, the tub may be made of tin, copper, galvanized iron, or other materials.

I claim—

1. The sliding revolving rubber M, and its

shaft H, in combination with the bearing-bar O, adapted to slide with the former, and the grooved sides P of the tub, substantially as specified.

2. In combination with the revolving rubber head L the hub J, having projections *h h''*, bolts *h'*, and radial braces K, combined substantially in the manner and for the purpose specified.

In testimony of which invention I hereunto set my hand.

JOS. C. GRANNAN.

Witnesses:

FRANK MILLWARD,  
R. M. HUNTER.