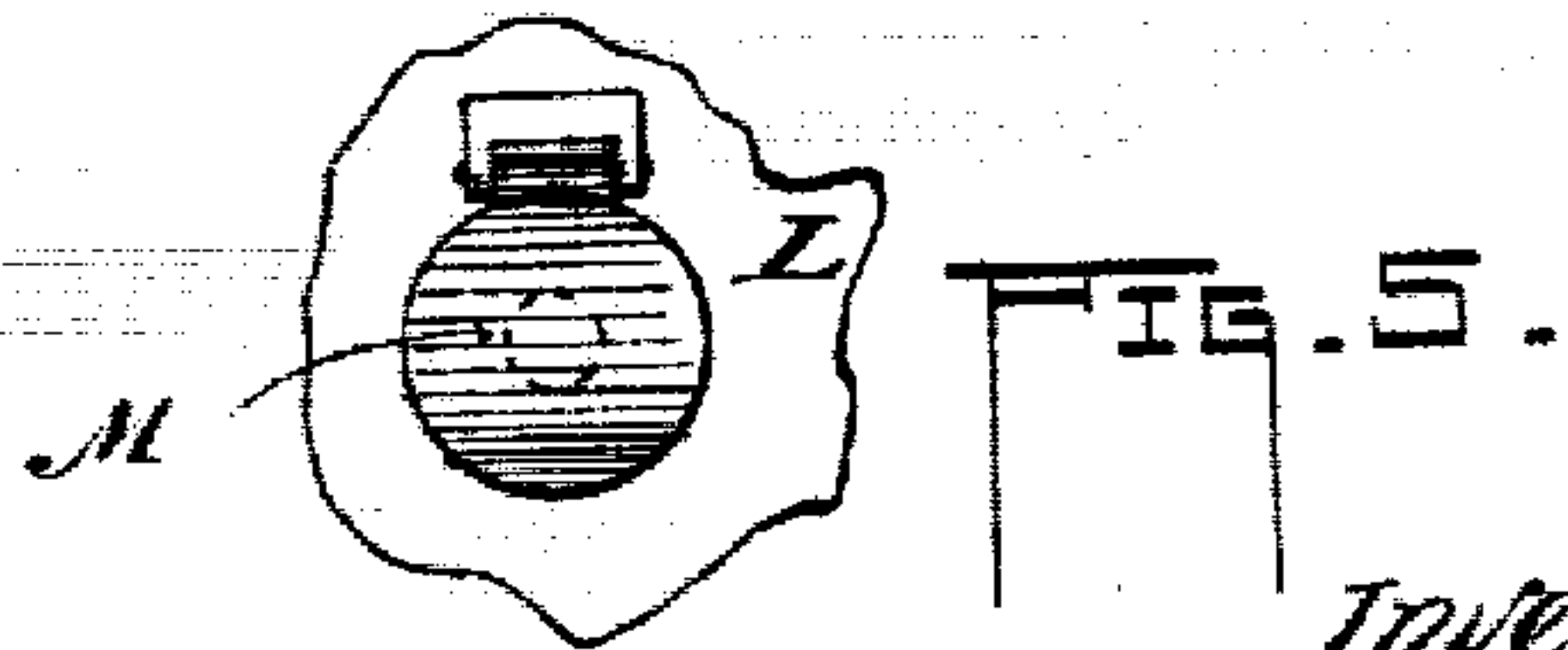
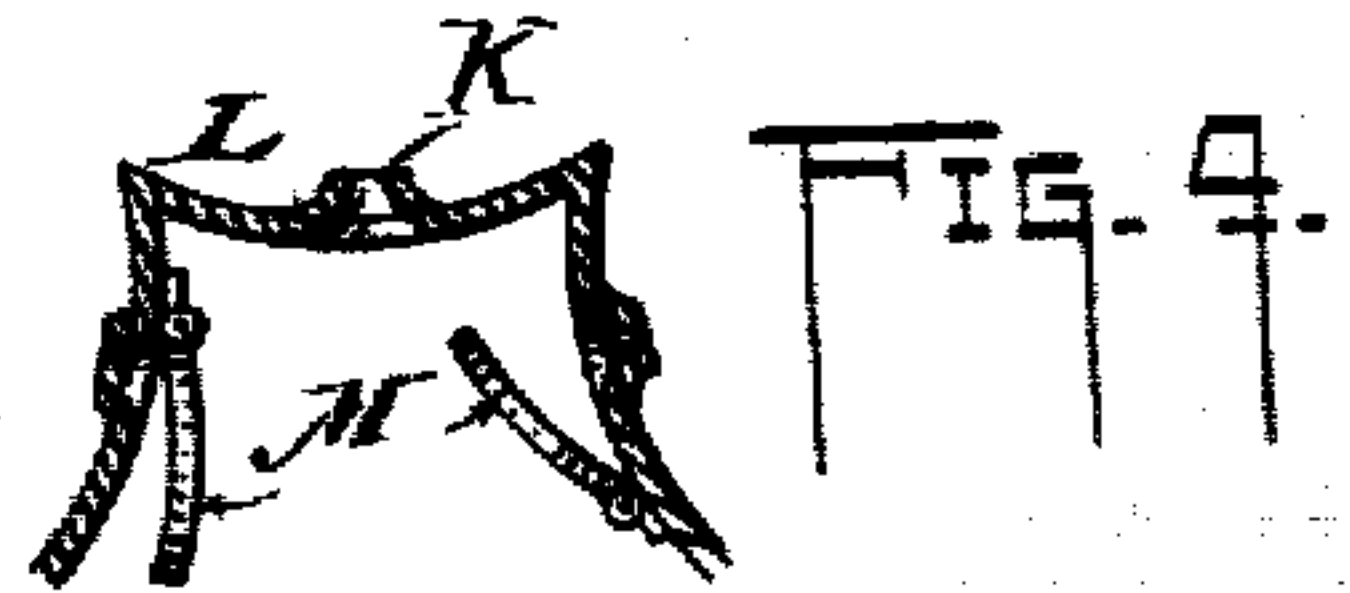
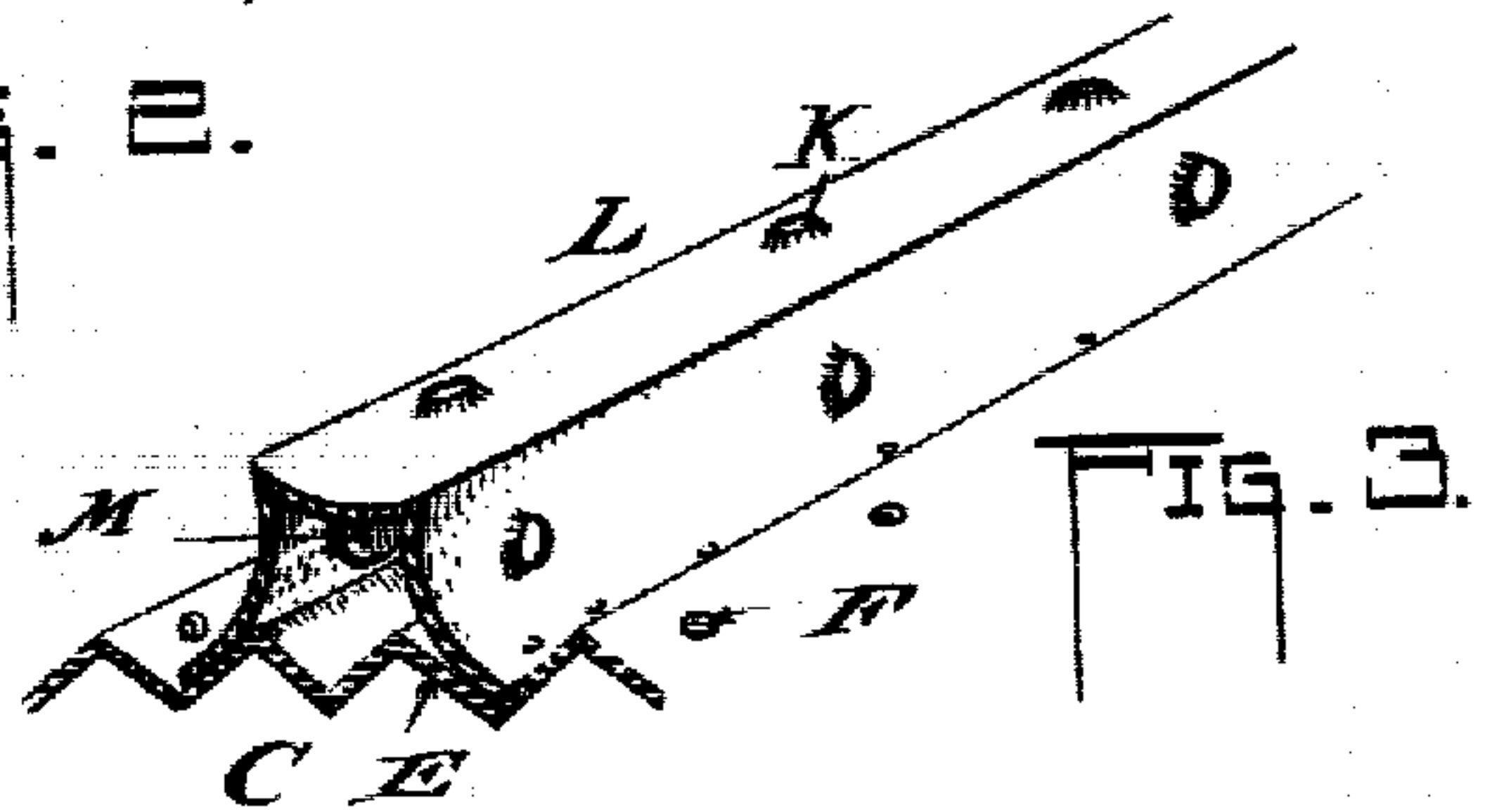
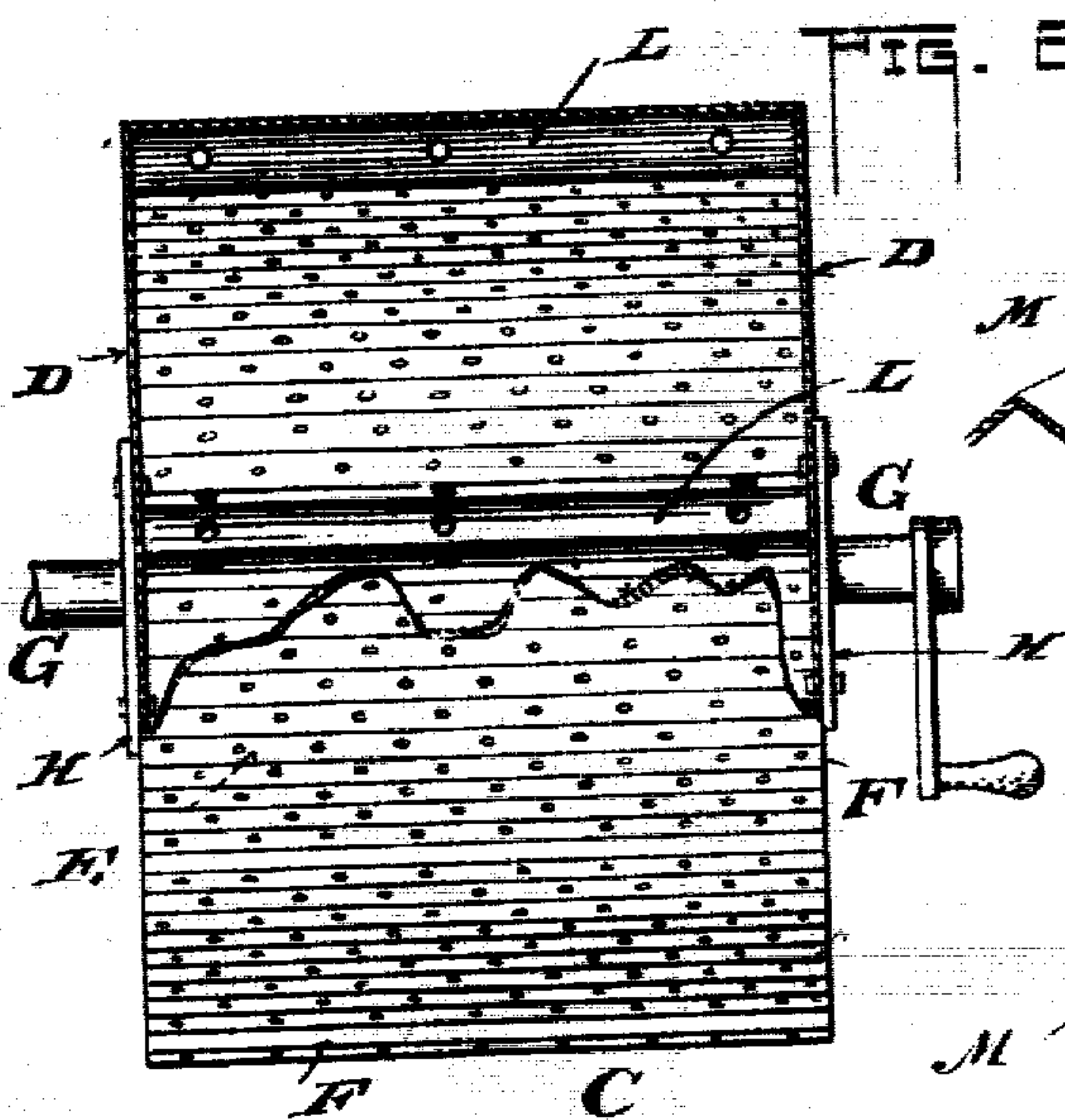
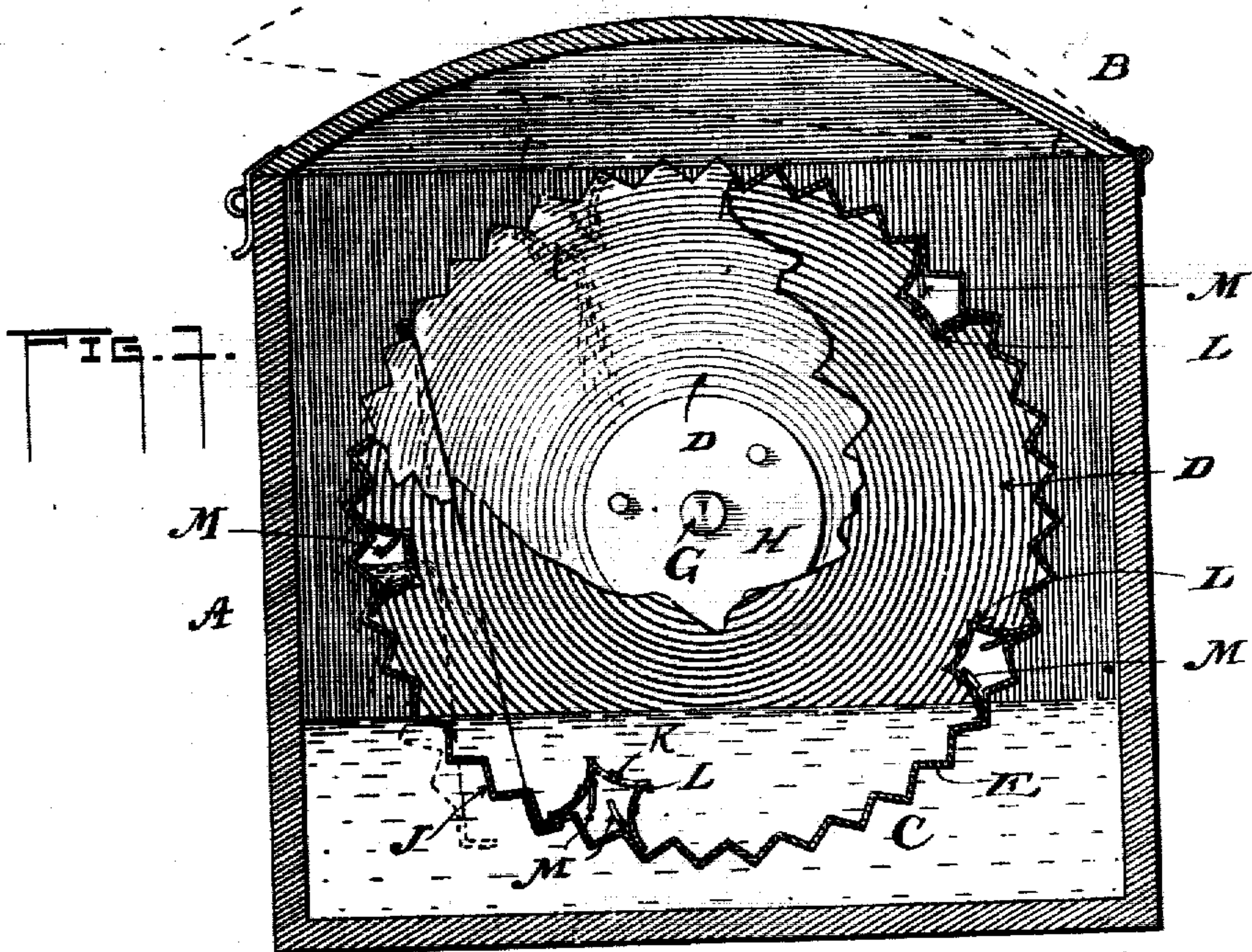


No. 820,349.

PATENTED MAY 8, 1906.

C. A. CHURCH.
WASHING MACHINE.
APPLICATION FILED MAY 16, 1904.



Witnesses—
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Charles A. Church
By L. M. Thurlow
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UNITED STATES PATENT OFFICE.

CHARLES A. CHURCH, OF PEORIA, ILLINOIS

WASHING-MACHINE.

No. 820,349.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed May 16, 1904. Serial No. 208,297.

To all whom it may concern:

Be it known that I, CHARLES A. CHURCH, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Washing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machines for washing and cleaning clothes and textile fabric and to machines of the rotary kind.

The invention has for one of its objects to construct a washing-machine that will combine with a corrugated rubbing-surface a series of valve-controlled water-carrying recesses to aid in the cleansing of the clothes.

A further object of the invention is to provide a series of ribs within the cylinder of a washing-machine parallel with the axis of said cylinder, the same having sharp angles to catch the clothes and carry them to a height, so as to keep the articles well separated during the cleansing process.

In the accompanying drawings, Figure 1 is an end elevation of the washing-machine, showing a revoluble cylinder in cross-section. Fig. 2 is a side view of the cylinder with parts broken away to show interior construction. Fig. 3 is a perspective view of a portion of the surface of the cylinder, showing a tubular or hollow member attached thereto in which are apertures for ingress and egress of water. Fig. 4 is an end section of said member, showing valves for closing certain of the apertures. Fig. 5 is a view of one of the valves shown in Fig. 4.

In Fig. 1, A indicates the container or suds-box of my washing-machine provided with a suitable cover or lid B, and within said container is a revoluble cylinder C, consisting of the parallel heads D D, between which is the cylindrical wall E of such cylinder. This said wall constitutes the rubbing-surface, being corrugated, as shown, each surface having a series of holes or perforations F, through which the water in the container A is allowed to pass. The cylinder is supported by means of the shaft-sections G, secured in suitable manner in the flanges H, secured to the heads D, the shafts having bearings in the body A. (Not shown.) A hinged cover J is provided for the cylinder D, by which the interior of

the latter may be readily reached and supplied with the materials to be washed.

At intervals the inner corrugated surface of the cylinder is provided with longitudinal water-containers created by affixing to the wall E ribs L, formed of metal made substantially in the form of a U, whose walls, however, are concaved, as illustrated in the several figures. These ribs extend from end to end of the cylinder between the heads D, as shown in Fig. 2, and each limb is provided with apertures K, those at each side being closed by flap-valves M, oppositely hung, as in Fig. 4—that is to say, the valve on one side of the rib L is hung from the top, while the opposite one of the same rib is hung at the bottom, so that one will close while the other is open. Said valves are operated by pressure of water and the force of gravity.

In operation the hot water is placed in the receiver or body A, the clothes to be washed being placed within the cylinder and the lid J closed and latched by any good means. The cylinder is either revolved continuously in one direction or given a rocking motion—i. e., first in one direction and then in the other. The effect of this is to lift the clothes and continually alter the position of each piece. Were it not for the members L the clothes would be rolled in a tangled mass that could not be cleansed except on the outside. I desire to state that I am perfectly aware that it is not new to provide a corrugated cylinder for the purpose of better cleaning the fabrics, nor is it new to provide the said members L; but in most of the devices of which I have apprised myself the said members are made with round surfaces, so that the clothes are but little agitated, simply rolling from them as they pass by. In my device the members are provided with sharp corners, which are created by making the walls of the members concave in cross-section, the resulting angles being acute. Now as a result the sharp corner will catch the clothes and elevate them to a considerable height before they fall to the bottom of the cylinder. By this action the steam is given free access to every garment or piece of fabric being cleaned, and the hot water is made to permeate every portion. The result, therefore, of this construction is to tumble and turn and separate and keep separated every article within the machine, so that the cleansing operation is perfect. In addition

to this advantage in this form of the rib or member L the machine is enabled to elevate the hot sudsy water in the following manner: If we suppose the cylinder to be revolving toward the right as viewed in Fig. 1, the members will enter the water at the right side. When immersed, the cavity will fill with water through the three series of apertures, the uppermost valves being opened by gravity and allowing free entrance of water, the lower valves being forced open by the pressure of water thereagainst as the cylinder revolves. The apertures on the front wall being always open will allow the passage of water in and out according to the position of the cavity, whether at the top or bottom of the machine. The member under water in Fig. 1 has both its valves open, and the cavity is entirely full of water. Now as it passes out at the left side the undermost or lower valve will close by gravity, as well as by the weight of the water contained in the cavity, while the upper valve will be open and remain so. The water thus elevated is carried nearly to the top of the machine, being allowed to escape during its entire ascent through the front openings, which are provided with a projecting lip or bur, so that the water will pour out in a stream instead of dribbling down to the edge of the member and then falling. When leaving the water, the cavity is full of water, which immediately begins to run out upon the clothes. Now since the members carry the clothes up, as hereinbefore described, the water from the cavities is poured upon the hanging garments and upon those lying at the bottom of the cylinder. The clothes in constantly changing their positions are continually receiving a charge of water from above to assist in thoroughly cleansing them.

I am not aware that a washing-machine has heretofore been employed wherein a rib of the form described and shown has been used for the purposes named, nor am I aware of a cavity provided with valves by which the water can be elevated and discharged upon

the clothes from above, and it is my desire and aim to claim these advantages, or rather the means for accomplishing these results, as my own. I desire to state, however, that I do not wish to confine myself to the exact construction set forth, as slight changes may be made without changing the results in operation or sacrificing the spirit of my invention.

The holes F are omitted in the cylinder where the members L are located, so that the water must escape through the openings in the ribs or members themselves. If the holes F were left in the wall E, the water would run out through them, and thus the desired result of precipitating it from a height would be lost.

The machine thus constructed may be used in laundries as well as in private use, answering as well in either line of work. The ribs or members L may be made solid when the water-elevating feature is not desired, and the raising of the clothes will result as well, and good work can likewise be done.

Having described my invention, I claim—

In a washing-machine, a stationary suds-box, a revoluble cylinder therein having a perforated, corrugated rubbing-surface, a series of hollow ribs disposed at intervals around the inner surface of the said cylinder on certain of the corrugations, said ribs being substantially square in cross-section, there being apertures in the three walls that extend into the interior of the cylinder, the cylinder-wall to which the ribs are secured being imperforate within said rib, and a valve within each rib for each aperture of the side wall, the valves of one side being hung oppositely from those of the other side for the purposes set forth.

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

CHARLES A. CHURCH.

Witnesses:

FRANK T. MILLER,
L. M. THURLOW.