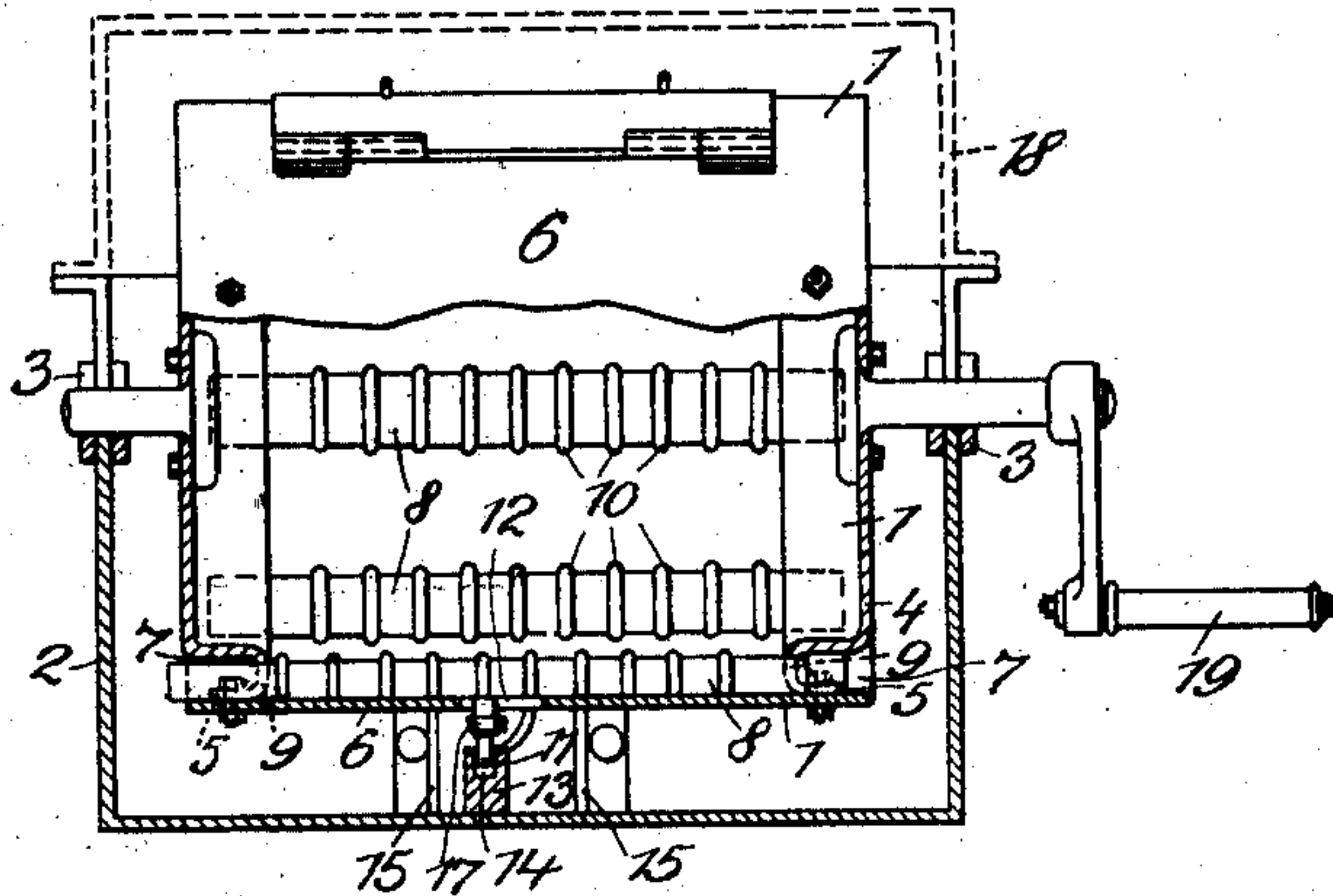


No. 883,776.

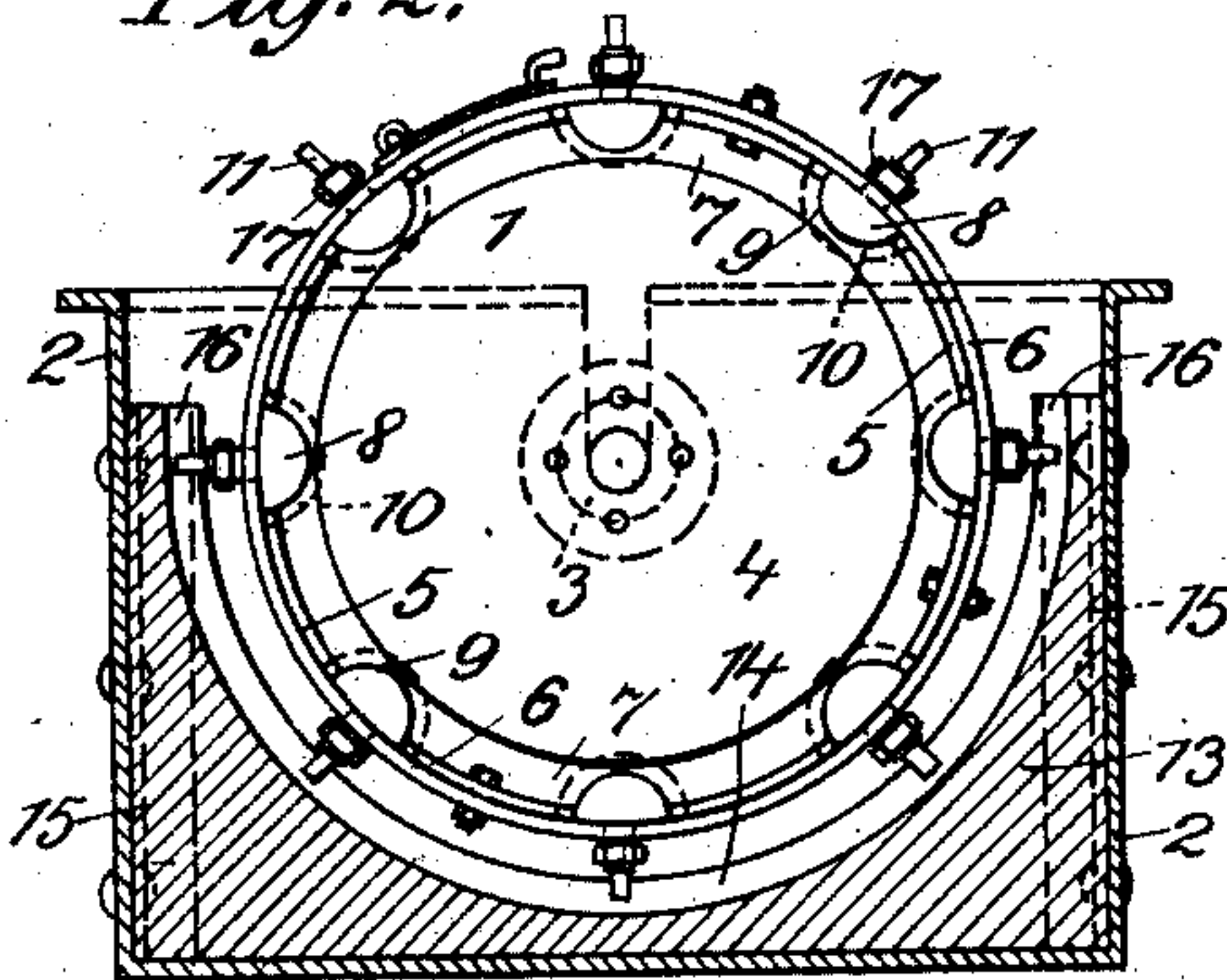
PATENTED APR. 7, 1908.

O. R. BEIER.  
WASHING MACHINE.  
APPLICATION FILED MAY 7, 1907.

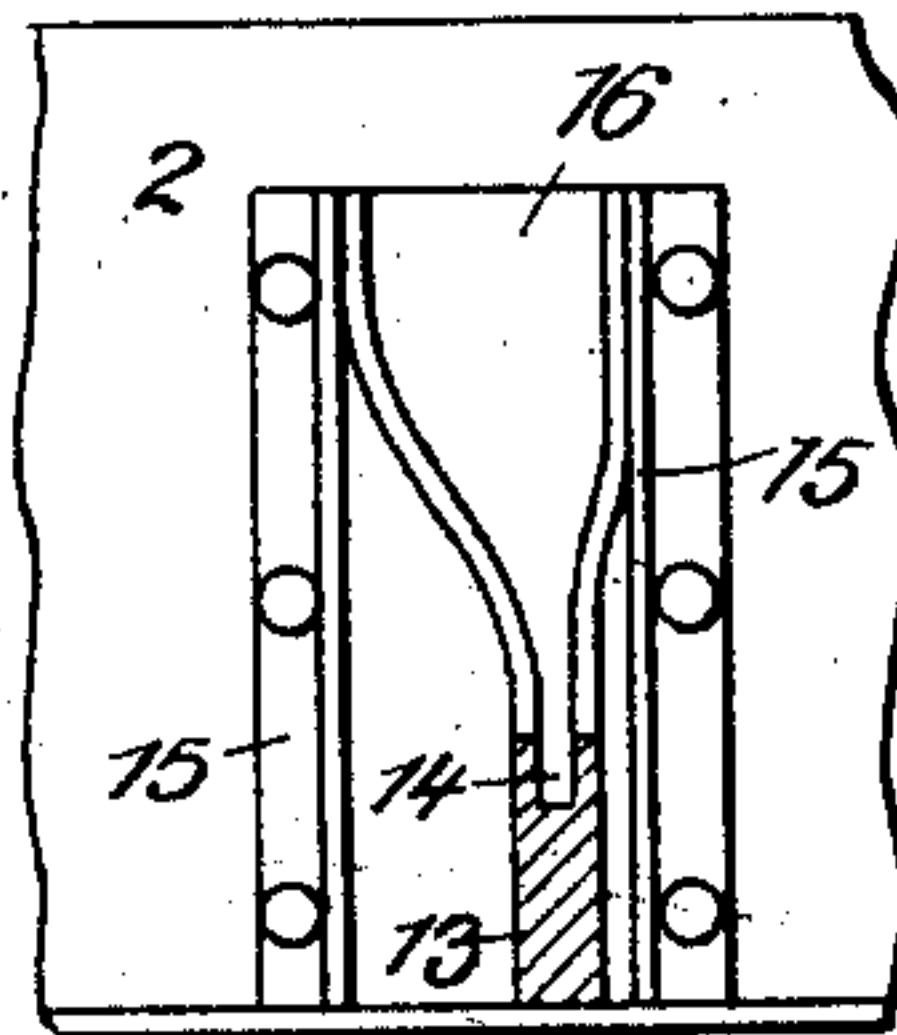
*Fig. 1.*



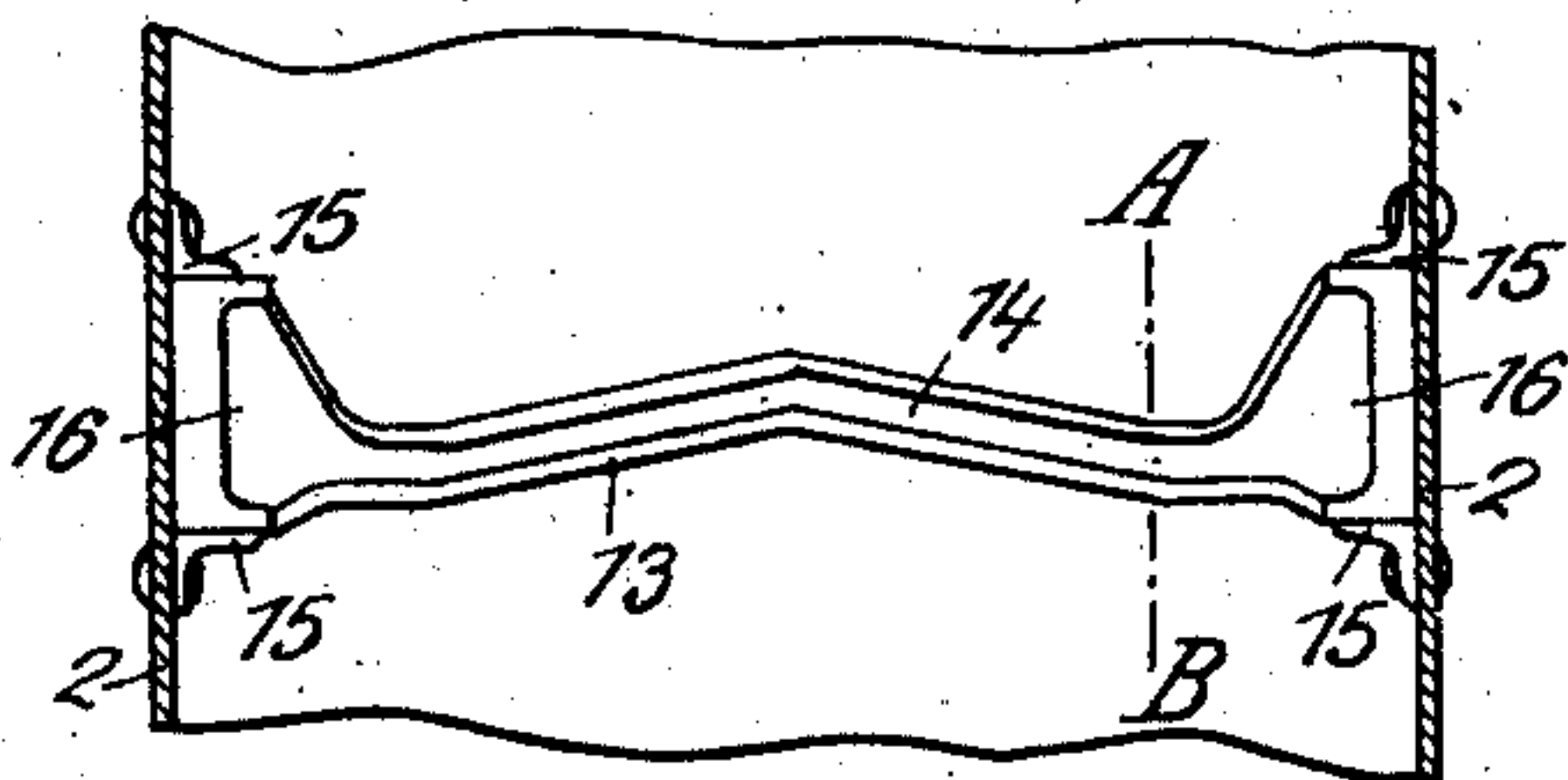
*Fig. 2.*



*Fig. 7.*



*Fig. 3.*



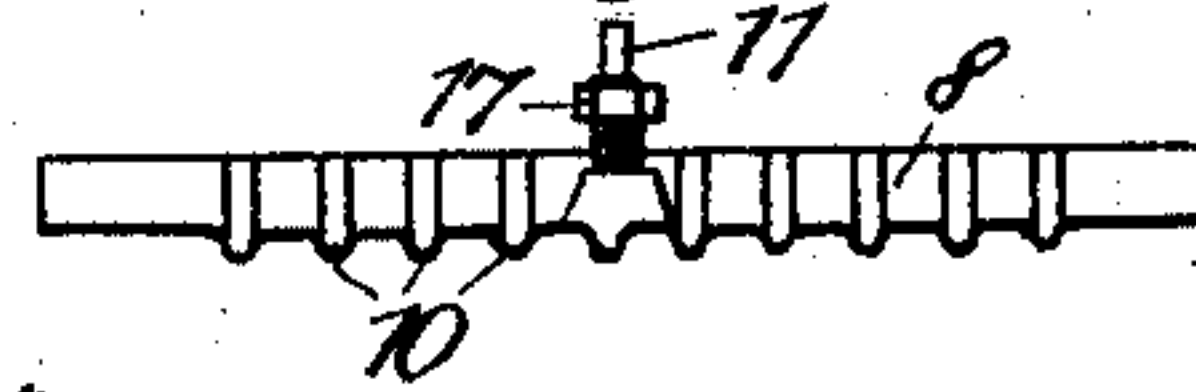
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



Witnesses:  
J. E. Nares  
M. Henkowitz

Inventor:  
Otto Reinhold Beier  
by his attorney  
Edmund J. Beier



# UNITED STATES PATENT OFFICE.

OTTO REINHOLD BEIER, OF OELDE, GERMANY.

## WASHING-MACHINE.

No. 883,776.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed May 7, 1907. Serial No. 372,305.

*To all whom it may concern:*

Be it known that I, OTTO REINHOLD BEIER, a subject of the German Emperor, and a resident of  $\frac{1}{2}$  Geiststrasse of Oelde, in Westphalia, in the Kingdom of Prussia, German Empire, mechanician, have invented a new and Improved Washing-Machine, of which the following is a specification.

10 The invention relates to a washing machine formed as a drum.

In accordance with the invention, by rotating the washing drum which rests in the known manner in a receptacle filled with 15 water and receives the laundry articles, washing bars arranged inside the drum and provided with flutings, protuberances, perforations or the like, are caused to move to and fro. For this object the movable wash- 20 ing bars are guided in one or more guide-ways arranged on the receptacle of the drum and formed in the shape of an oblique or zig-zag or corrugated or otherwise suitable line. The result of this reciprocating movement of 25 the washing bars is that the laundry articles are washed or rubbed in the same manner as by hand or with a hand scrubbing board.

Several constructional forms of the novel machine are represented by way of example 30 in the accompanying drawing, in which:—

Figure 1 represents a type of the machine in longitudinal section. Fig. 2 is a front elevation of the washing drum, showing a form of the guide-way for the washing bars 35 in section. Fig. 3 is a top view of said guide-way for the bars. Fig. 4 is a diagrammatic representation of another form of the guide-way. Fig. 5 shows a washing bar assumed to be wooden, in side elevation. 40 Fig. 6 shows a constructional form of a washing bar pressed from sheet steel or the like, in longitudinal section, and Fig. 7 represents a cross section through the guide-ways on the line A—B of Fig. 3.

45 In the constructional form of the invention represented in Fig. 1 the washing drum 1 is rotatably mounted on the support or vessel 2 in bearings 3. The drum, which receives the laundry articles, is preferably constructed and mounted in such a manner as to 50 be readily removable from the vessel 2. The ends 4, 4 of the drum 1 are provided with flanges 5, 5 which are so bent inwardly that a concentric annular space 7 is left free 55 between the periphery 6 of the drum and the ends 4, 4.

Inside the drum 1 washing bars 8 are mounted so that they may be reciprocated. Their ends engage in openings 9 formed in the flanges 5, 5 and corresponding in form 60 with the bars 8. These bars are provided with flutings 10. The bars 8 are further provided on the face outwardly directed with projections or pins 11 sliding in slots 12 in the periphery 6 of the drum when the re- 65 ciprocation of the bars 8 takes place. The reciprocating movement of the bars is obtained in the following manner. During the rotation of the drum the projecting pins 11 are guided in the slot 14 of a guide-way 13, 70 which presents a zig-zag, corrugated, oblique or the like form (see Figs. 3 or 4). The guide path 13 is formed by means of guide rails 15 on the vessel 2 and embraces preferably about one half the circumference of the 75 drum 1. When the drum is rotated by means of a handle 19 or the like, the pins 11 are received upon a widened portion 16 of the slot 14 of the guide-way 13 and then guided along the slot 14. By this means the wash- 80 ing bars in the lower part of the drum are given a reciprocating movement corresponding to the shape of the slide way 13, so that the articles in the drum which are to be washed are rubbed on its bearing surfaces. 85 During the rotation of the drum the articles turn over so that fresh articles or surfaces are continuously supplied to the bars.

The projections 11 are preferably screwed into the bars so that the projections and the 90 bars may readily be removed for cleaning or replacement. The screw-pins 11 bear nuts 17 by means of which the bars 8 are loosely and movably held in a proper position on the drum periphery 6 and in the slot 12 of it. 95

The vessel 2 is preferably closed by a cover 18 during the washing operation.

It will of course be understood that the apparatus described may be modified in many 100 ways.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim and desire to procure by Letters Patent in the 105 United States is:—

1. In a drum washing machine a rotatable washing drum for the reception of the laundry articles, a support for the drum, washing bars movably attached to the inner wall of 110 said drum and provided with rubbing faces directed to the inside of the drum, a guide



way provided on said support for the drum and forming a broken line, and projections formed on said bars and projecting to the outside of said drum into said guide way for the purpose of the reciprocation of the bars during rotation of the washing drum.

2. In a drum washing machine a rotatable washing drum for the reception of the laundry articles, a support for the drum, washing bars movably attached to the inner wall of said drum and having rubbing faces directed to the inside of said drum, a guide way provided on said support and embracing the washing drum semi-circularly in a broken line, and projections on said bars and projecting to the outside of said drum into said guide way for the purpose of the reciprocation of the bars during rotation of the washing drum.

3. In a drum washing machine a rotatable washing drum for the reception of the laundry articles, a support for the drum washing bars movably attached to the inner wall of said drum and having rubbing faces directed to the inside of said drum, a guide way pro-

vided on said support and embracing the washing drum semi-circularly in a broken line and having widened ends, and projections on said bars projecting to the outside of said drum into said guide way for the purpose of the reciprocation of the bars during rotation of the drum.

4. In a drum washing machine a rotatable washing drum for the reception of the laundry articles, a support for the drum, washing bars movably attached to the inner wall of the drum and provided with rubbing faces directed to the inside of the drum, a guide way provided on said support and showing a broken line, projections screwed into said bars and projecting to the outside of said drum into said guide way, and nuts on the screw projections for securing the proper position of said bars.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

OTTO REINHOLD BEIER.

Witnesses:

BESSIE L. DUNLAP,  
LOUIS VANDORN.