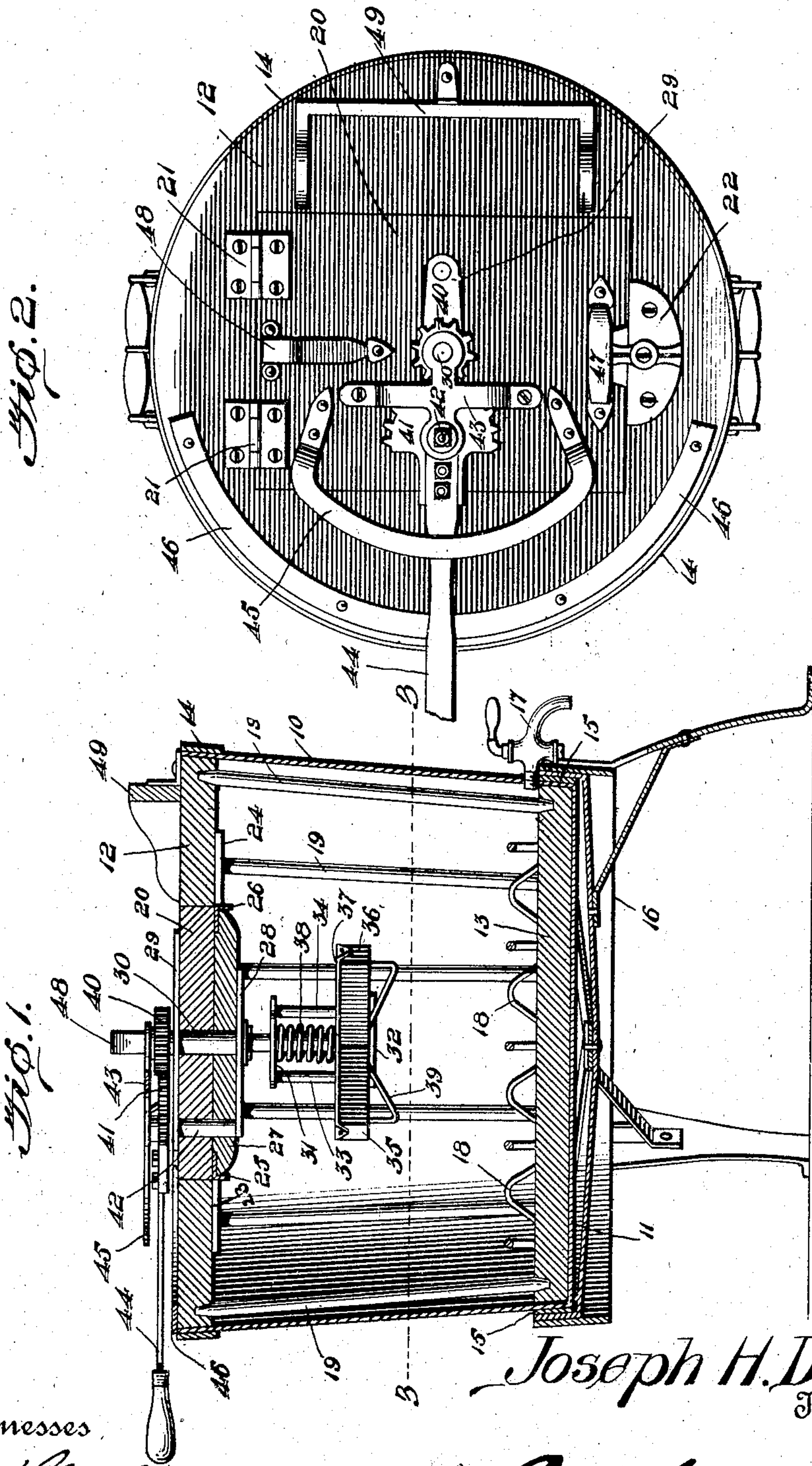


No. 791,756.

PATENTED JUNE 6, 1905.

J. H. DORVAL.
WASHING MACHINE.
APPLICATION FILED JULY 8, 1904.

2 SHEETS—SHEET 1.



Witnesses
E. J. Howard
C. W. Woodward

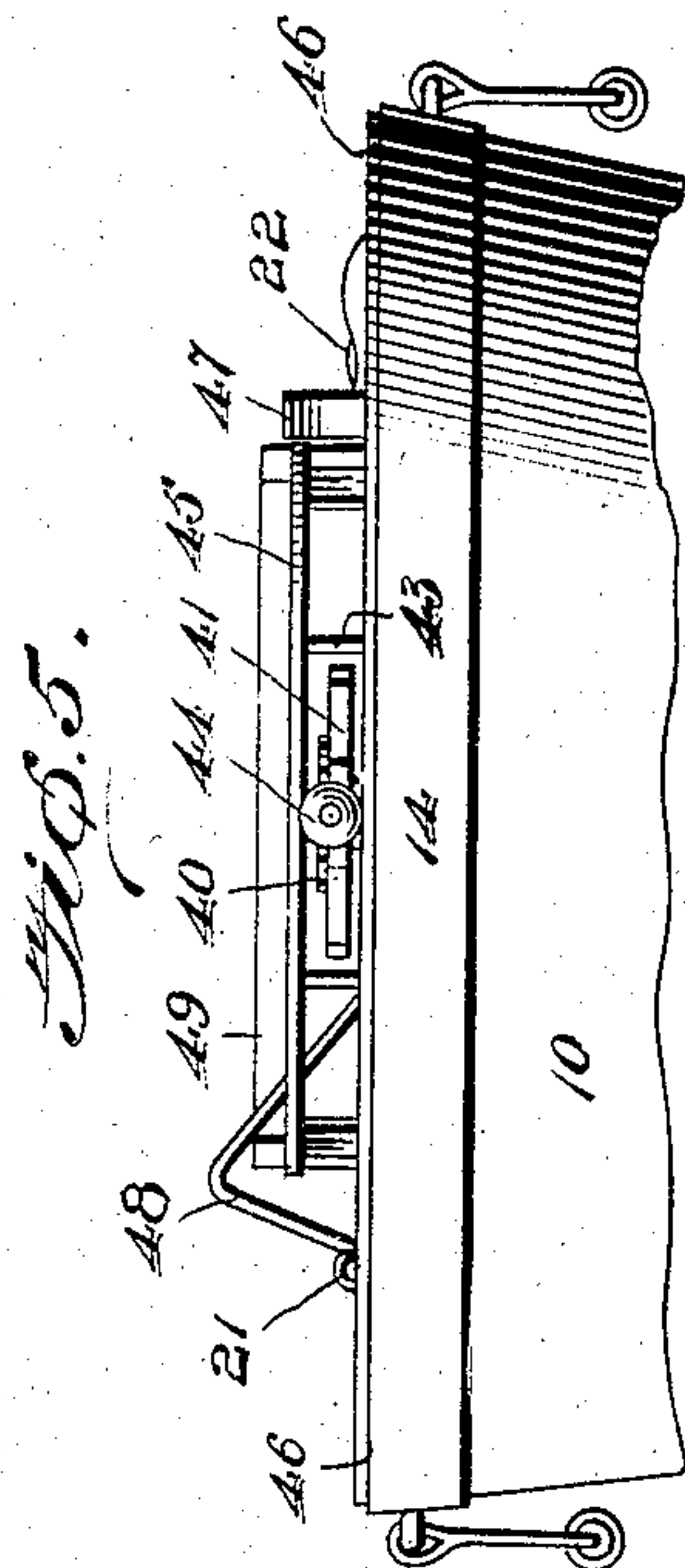
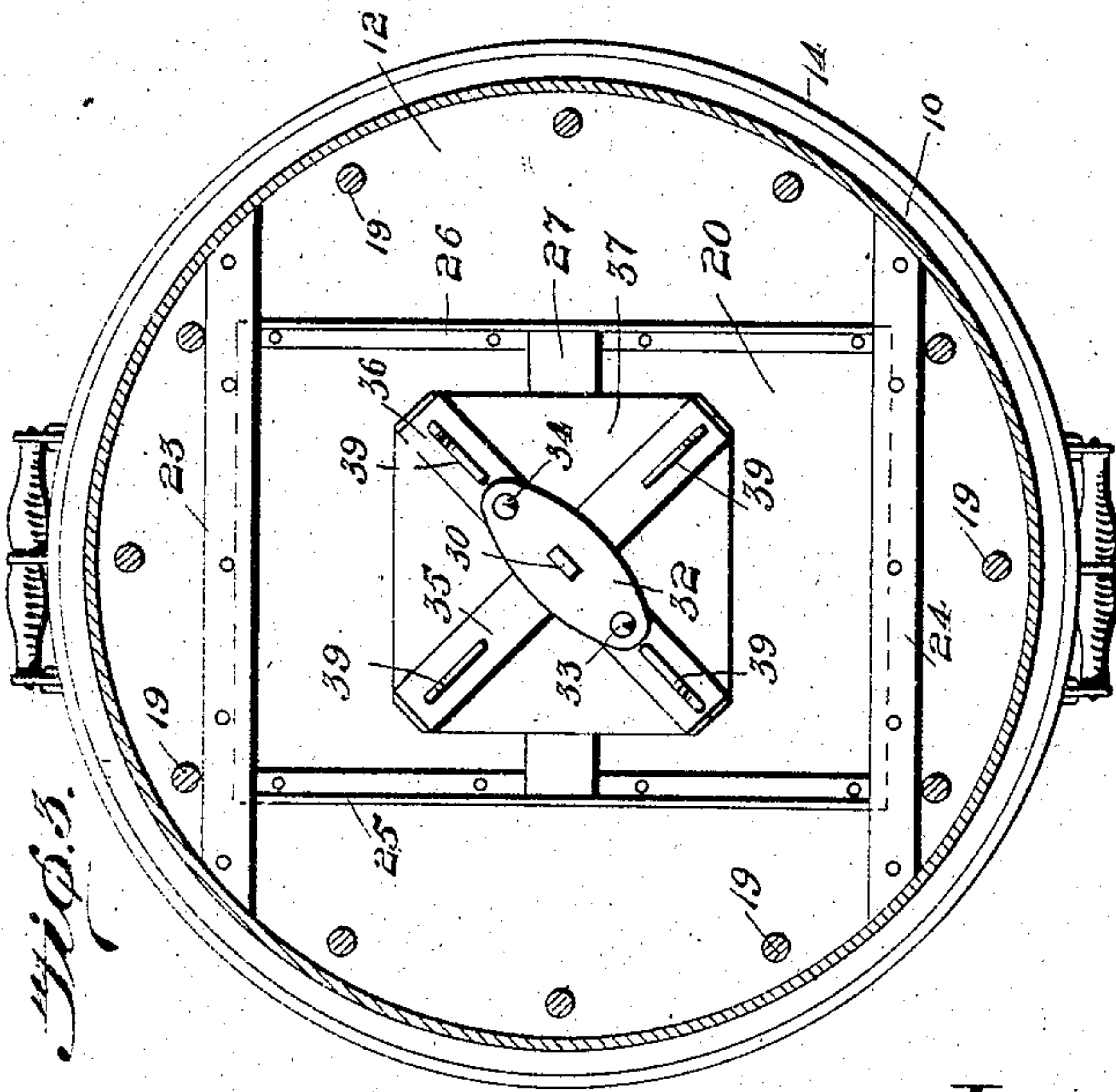
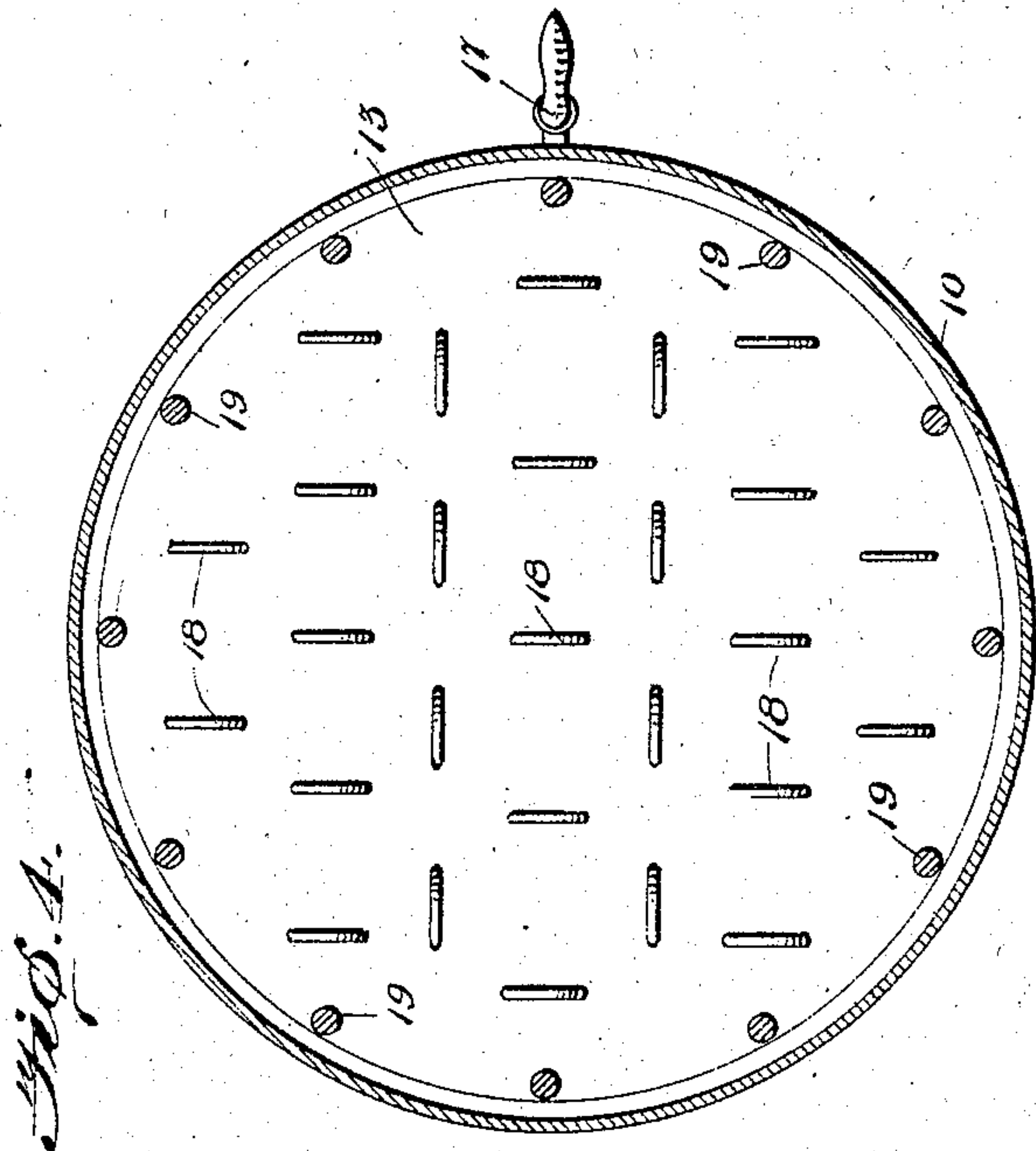
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UNITED STATES PATENT OFFICE.

JOSEPH HILL DORVAL, OF WILDRICE, NORTH DAKOTA.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 791,756, dated June 6, 1905.

Application filed July 8, 1904. Serial No. 215,785.

To all whom it may concern:

Be it known that I, JOSEPH HILL DORVAL, a citizen of the United States, residing at Wildrice, in the county of Cass and State of North Dakota, have invented a new and useful Washing-Machine, of which the following is a specification.

This invention relates to washing-machines, and has for its object to improve the construction and increase the efficiency, rapidity, and thoroughness of the action.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in certain novel features of construction, as hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which corresponding parts are denoted by like designating characters, is illustrated the preferred form of the embodiment of the invention capable of carrying the same into practical operation, it being understood that the invention is not necessarily limited thereto, as various changes in the shape, proportions, and general assemblage of the parts may be resorted to without departing from the principle of the invention or sacrificing any of its advantages, and the right is therefore reserved of making all the changes and modifications which fairly fall within the scope of the invention and the claims made therefor.

In the drawings thus employed, Figure 1 is a sectional side elevation. Fig. 2 is a plan view. Fig. 3 is a section on the line 3 3 of Fig. 1 looking upward, and Fig. 4 is a sectional view on the same line looking downward. Fig. 5 is a side view of the upper portion of the machine viewed from the side at right angles to Fig. 1.

In the improved device is comprised a tub or receptacle for the clothes, being, preferably, circular in transverse section and having galvanized iron or steel sides 10, bottom 11, a wooden upper end 12, and a wooden internal false bottom 13. The receptacle is strengthened and supported by hoops 14 15 at the top and bottom and will preferably be mounted upon a supporting-stand 16 and provided with a suitable draw-off plug or faucet 17.

Secured in the false bottom 13 are a plural-

ity of loops 18, preferably of galvanized wire, arranged in irregular order or in transversely-disposed lines, and with rubbing ribs or members 19, extending between the false bottom 13 and top member 12 and spaced apart and also spaced from the side walls 10.

The top 12 is formed with a central aperture, in which a closure 20 is movably connected, as by hinges 21, at one end and provided with a holding-button 22 at the other end.

The top member 12 is provided with stop-strips 23 24, extending beneath the hinged and buttoned ends of the closure and upon which the closure rests when closed. The side edges of the closure 20 are provided with L-shaped strips 25 26, extending into the interior of the receptacle and forming a strengthening means to the closure.

Disposed transversely of the lower face of the closure member 20 is a cleat 27, upon whose lower face a plate 28 is placed, and a similar plate 29 rests upon the outer face of the closure member, the two plates being secured in place by screws or rivets.

A shaft 30 is mounted for oscillation through the plates 28 29 and closure 20 and cleat 27, being held and supported by the plates, which thus receive all the wear and friction.

Attached to the lower portion of the shaft 30 within the receptacle are spaced laterally-extending plates 31 32 and connected at their ends by guide-rods 33 34.

An agitator, including a pair of bars 35 36 crossing each other, is slidably disposed upon the shaft 30, between the plates 31 32, with the guide-rods passing through the bar 36 and with the said crossed bars covered upon their upper faces by a sheet-metal plate 37, with the corners of the plate turned down over the ends of the bars and secured thereto, as by screws or other fastening means.

A spring 38 surrounds the shaft 30 between the cover-plate 37 and the upper stop-plate 31 for supporting the agitator yieldably in its downward position.

Extending from the lower faces of the bars 35 36 are galvanized-wire loops 39, with their outer sides vertical and their inner sides inclined upwardly and inwardly, the object to be hereinafter explained.

Attached to the upper end of the shaft 30

above the plate 29 is a gear 40, adapted to be engaged by a larger segmental gear 41, mounted for oscillation upon a stud 42 rising from the plate 29, the stud and shaft 30 being supported by a stay-plate 43, engaging their upper ends. The segmental gear member 41 is provided with an operating-lever 44, arranged for movement beneath a curved guard member 45, attached by its ends to the closure 20 and above a wear-strip 46 on the upper face of the top member 12. By this arrangement it will be obvious that the agitator may be oscillated within the receptacle by vibrating the lever-arm 44, and by reason of the difference in size between the segments 40 41 a comparatively short sweep of the lever 44 will cause a comparatively extended movement to the agitator. As the agitator is thus actuated the loops 39 and bars 35 36 will engage the clothes and carry them rapidly over the bottom loops 18 and produce a vigorous and efficient rubbing action, which will thoroughly cleanse the clothes and remove the adhering dirt.

It will be noted that the agitator and its operating mechanism are all connected to the closure 20, and when the latter is opened upon its hinges 21 the agitator will be removed therewith from the receptacle, and then when the clothes to be cleansed, together with the water and soap or other detergent, are inserted and the closure replaced the agitator will be held by the force of the spring 38 upon the clothes and maintain them forcibly in engagement with the loops 18 and between the two sets of loops 18 39. The oscillating action of the agitator also moves the clothes vigorously back and forth against the rubbing-ribs 19, and thus materially increases the efficacy of the action. The rapid oscillating action also produces a certain degree of centrifugal motion, which is effectually counteracted by the inclined form of the inner sides of the loops 39, which by their form catch the clothes as they are thrown outward by the centrifugal force and return them toward the center of the receptacle, and thus maintain them in a uniform position and materially increase the beneficial action by treating all parts uniformly.

The guard member 45 also serves an important function, as it protects the segment member 41 and prevents any upward strain being imparted thereto and receives the up-

ward thrust when the closure 20 is opened by lifting on the lever 44.

The closure 20 is provided with a handle 47 at one end for assisting in opening it, and with a stop 48 at the hinge end to limit the distance to which it may swing backward, so that it will not swing backwardly to an undue extent.

The device may be made of any desired size or of any suitable material, but will preferably be of wood and metal, with the metal parts galvanized or otherwise protected from corrosion.

A wringer-bracket 49 will be attached to the top member 12, as shown.

Having thus described the invention, what is claimed is—

1. In a washing-machine, a receptacle, a top plate having a rectangular opening, a hinged closure for said opening, transverse parallel braces on the under side of the top plate adjacent to the front and rear edges of the opening, angle-plates secured to the under side of the closure at the side edges thereof, a transverse cleat upon the under side of the closure, wear-plates upon the under side of said cleat and upon the upper side of the closure, and an agitator-carrying shaft extending through and journaled in said closure, cleat, and wear-plates.

2. In a washing-machine, the combination of a receptacle having a rubbing-surface in the bottom thereof, a top plate, a shaft mounted for oscillation in said top plate, a pair of plates, spaced apart and secured to said shaft at and near the lower end thereof, rods connecting said plates, an agitator slidingly engaging said shaft and rods, said agitator including a pair of crossed bars, wire loops on the under sides of said bars, and a plate supported upon the upper sides thereof and having downturned corners secured to the ends of the bars, and a spring coiled upon the shaft between the agitator and the upper plate member.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOSEPH HILL DORVAL.

Witnesses:

WILLIAM RUSSELL,

WM. DORVAL.