

No. 891,765.

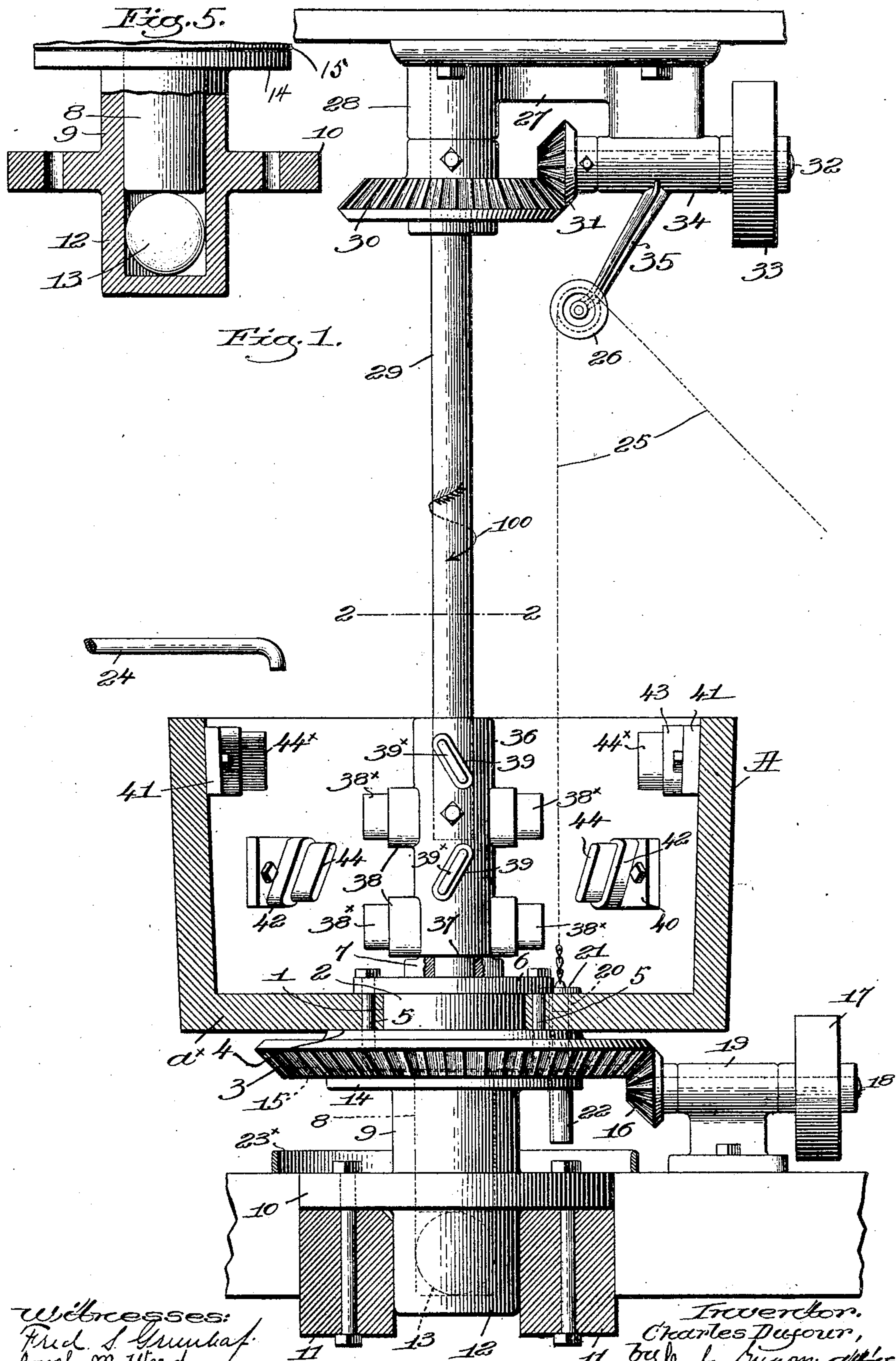
C. DUFOUR.

PATENTED JUNE 23, 1908.

APPARATUS FOR WASHING SHEEP SKINS.

APPLICATION FILED DEC. 2, 1907.

2 SHEETS—SHEET 1.



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Fig. 2.

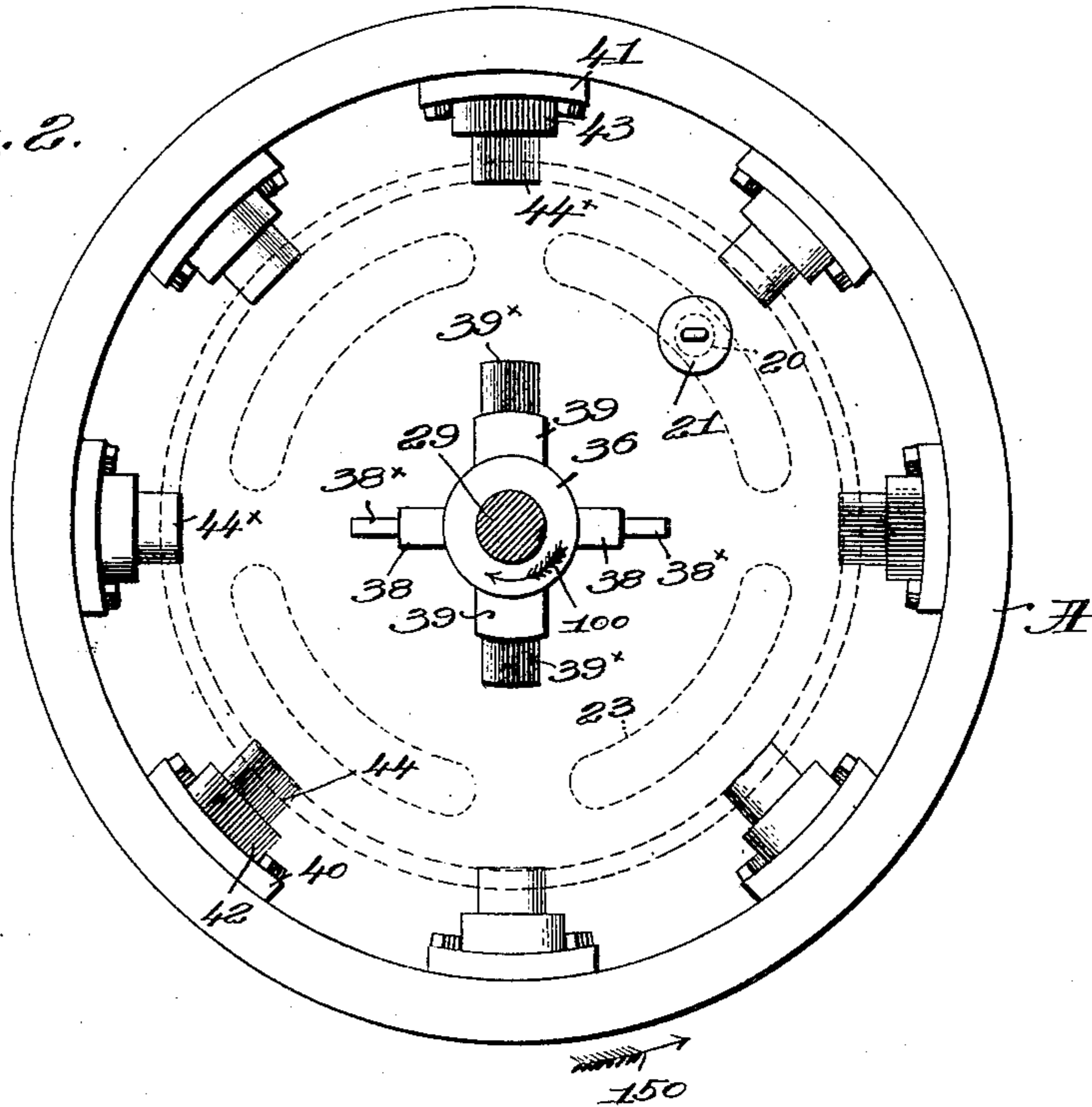


Fig. 3.

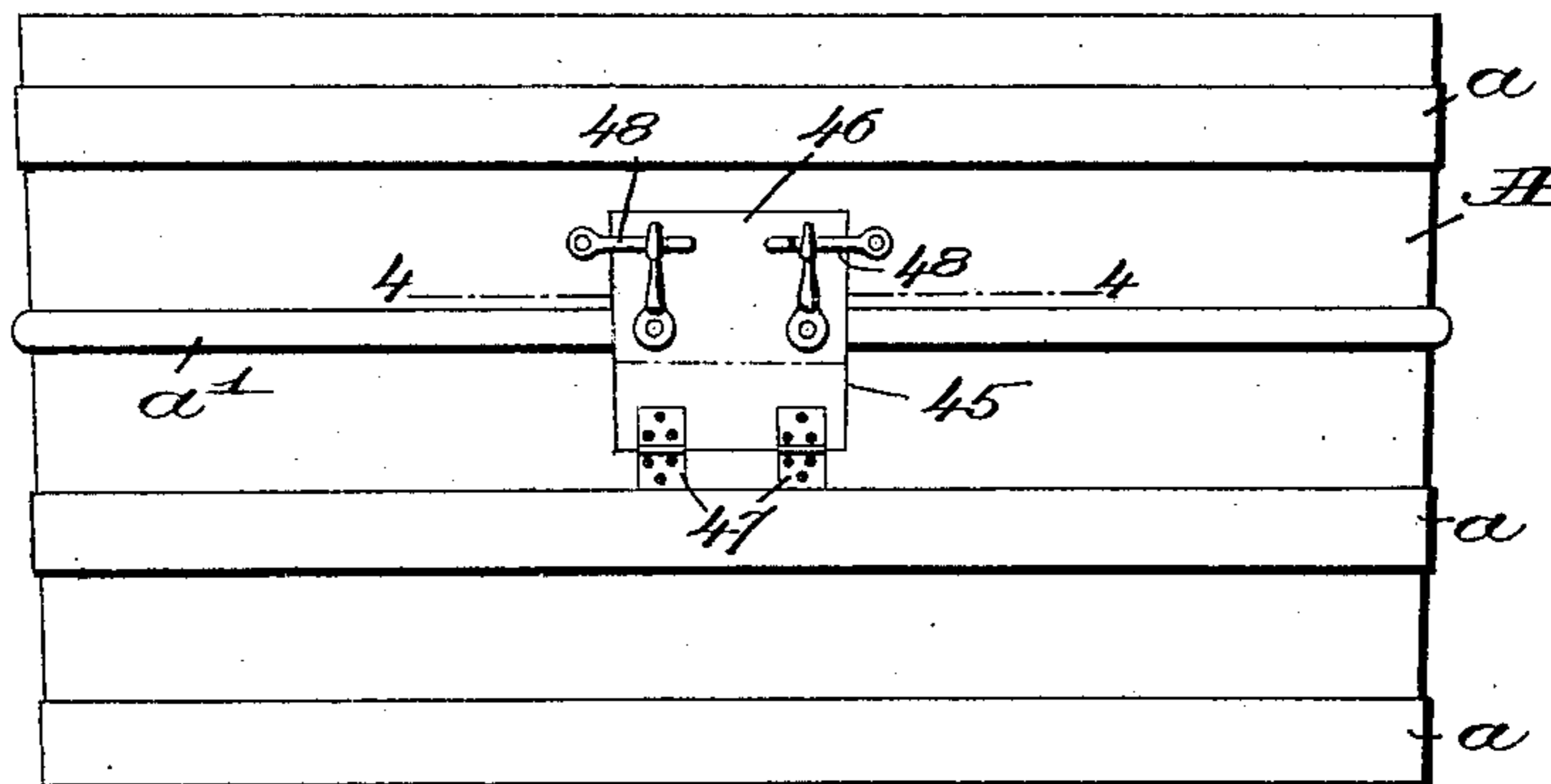
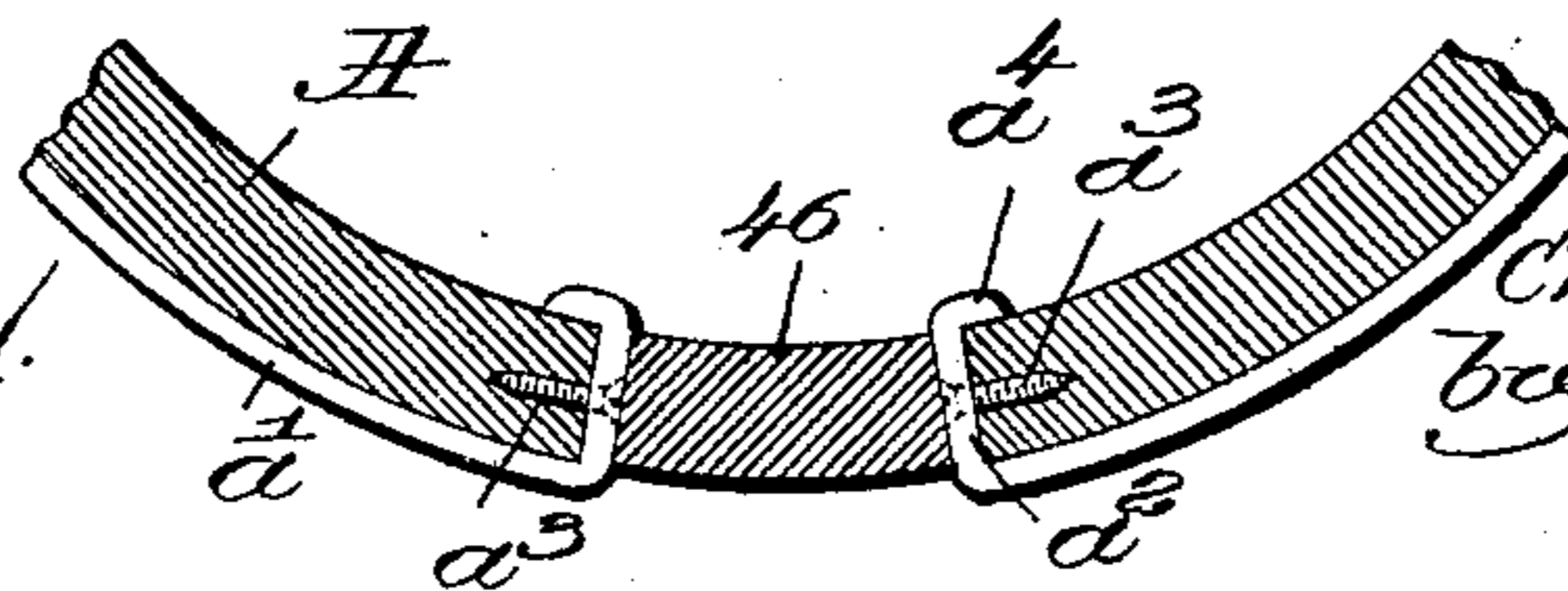


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES DUFOUR, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD TO CHARLES J. OUELLET AND ONE-THIRD TO JOSEPH BROUSSARD, BOTH OF CAMBRIDGE, MASSACHUSETTS.

APPARATUS FOR WASHING SHEEPSKINS.

No. 891,765.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed December 2, 1907. Serial No. 404,749.

To all whom it may concern:

Be it known that I, CHARLES DUFOUR, a subject of the King of Great Britain, and resident of Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Apparatus for Washing Sheepskins, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention has for its object the production of an apparatus for washing sheepskins with the wool on, or other articles in such manner that the cleansing fluid will be afforded ready access to all parts of the articles to be washed, the tub or vat to contain the articles being rotatably mounted and positively driven and provided with agitators to stir up the contents of the tub.

A positively driven upright shaft is extended into the tub and has attached stirrers which coöperate with the agitators in keeping the contents of the tub in movement, the relative positions of the agitators and stirrers being such that all danger of tearing or injuring the articles to be washed is entirely obviated.

The stirrer shaft is driven independently of the tub and in an opposite direction, and I have provided the bottom of the tub with a step bearing to vertically support the stirrer shaft and also maintain it in axial alinement with the axis of rotation of the tub.

In practice the tub is made of large size and access thereto is had by means of a door in the side wall of the tub, said door being tightly closed when the apparatus is in operation.

In practice the tub will be continuously supplied with water which escapes from an outlet at the tub-bottom, said outlet being opened just before the rotation of the tub is begun.

The various novel features of my invention will be fully described in the subjoined specification.

Figure 1 is a side elevation and partial section of a washing apparatus embodying my invention; Fig. 2 is a top plan view of the tub, the stirrer shaft being shown in section on the line 2—2, Fig. 1; Fig. 3 is a side elevation of the tub showing the door; Fig. 4 is a sectional detail on the line 4—4, Fig. 3, and Fig. 5 is a detail partly in section of the com-

bined lateral and thrust bearing for the spindle of the tub.

Referring to the drawings, the tub A which in practice will be made of wood securely hooped or banded as at *a*, Fig. 3, has a central opening 1 in its bottom *a*^x to receive the shouldered hub 2 of a large beveled gear 3, the enlarged shoulder 4 abutting against the under surface of the tub bottom and being secured rigidly thereto by bolts 5 extended through the tub-bottom and the circular base 6 of a step bearing 7 preferably made as a casting and for a purpose to be described.

The gear 3 has rigidly secured to or forming part of it a depending central spindle 8 which extends into an upright, tubular bearing 9 having an annular enlargement or flange 10 bolted or otherwise secured to timbers as 11 in the floor of the room in which the apparatus is to be used, the tubular part 12 of the bearing below the flange 10 receiving loosely within it a preferably hardened steel ball 13 on which the end of the spindle 8 is supported, as clearly shown in Fig. 5.

The ball takes up the weight of the tub and attached parts and of the tub contents when the apparatus is in use, and at the same time forms a step bearing having but little friction.

The tubular part 9 of the bearing laterally supports the spindle 8 and maintains the tub with its axis of rotation vertical.

The upper end of the lateral bearing 9 has an annular, enlarged head 14 upon which rests the circular base 15 of the central portion of the gear 3, but it will be understood that the weight of the parts carried by the spindle is sustained by the spherical step bearing 13 and not by the flattened head 14.

Rotation is imparted to the tub by suitable means, and herein I have shown a beveled gear 16 meshing with the large gear 3, and driven from any suitable source of power (not shown) by a belt applied to a pulley 17 on the pinion shaft 18 rotatably mounted in a bearing 19.

The tub has a hole 20 in its bottom adapted to be closed at times by a plug 21; see Figs. 1 and 2, and I have shown an outlet tube 22 depending from the tub and extended through one of the segmental openings 23, see dotted lines Fig. 2 in the gear 3.

In the rotation of the tub, the lower end of this tube 22 which forms a continuation

of the outlet hole 20 travels within a curbing 23^x, so that the wash water escaping from the tub will not drop onto the gearing but will be discharged below the same and can be conveyed by any suitable waste device from the curbing.

The wash water is introduced to the tub in any suitable manner, as by pipe 24, overhanging the tub, see Fig. 1.

I have shown the plug 21 as attached to a cord or chain 25, see Fig. 1, led over an overhead sheave 26, so that the plug can be withdrawn after the tub has been properly filled with the articles to be washed.

Secured to the ceiling above the tub is a bracket 27 having a bearing 28 for the upper end of an upright stirrer shaft 29, located co-axially with the spindle 8 and extended into the tub, the upper end of the shaft extending into the bearing 28.

A beveled gear 30 fast on the upper part of the shaft meshes with a pinion 31, and a shaft 32, provided with a belt pulley 33, to be driven from any suitable source of power, the shaft 32 being rotatably mounted in a suitable bearing 34 secured to or forming part of the bracket 27.

The sheave 26 is shown in Fig. 1 as carried by an arm 35 depending from the bearing 34.

The lower end of the stirrer shaft 29 enters and has fixedly secured to it an elongated cylindrical casting 36 provided at its lower end with a cylindrical lug 37 which enters the step bearing 7, whereby the shaft and its attached stirrer are vertically supported and also maintained in alinement with the axis of the tub A.

The casting 36 is provided with series of seats 38 and 39. There are two series of seats 38, one series being located at the lower end of the casting 36 and the other series nearer the top of the casting, the seats in both series, however, being substantially vertical. These seats receive stirrers 38^x, which in practice will be blade-like pieces of wood of proper length and dimensions driven into the seats and projecting radially from the stirrer shaft, as shown in Figs. 1 and 2.

There are two series of seats 39 alternating with the the series of seats 38, and referring to Fig. 1, it will be seen that the lower seats 39 are inclined in one direction while the upper series are inclined in the opposite direction, said seats also receiving wooden blade-like stirrers 39^x.

In the present embodiment of my invention, the stirrers are arranged two and two on the stirrer shaft, the stirrers 38^x being set at angles of 90° from the stirrers 39^x, as shown very clearly in Figs. 1 and 2.

Upon the inner face of the side walls of the tub A, I secure castings 40, 41, there being four of the castings 40 and a like number of the castings 41, but so arranged that the

castings of the one series alternate with the castings of the other series, as best shown in Fig. 2.

The castings are shaped to present elongated seats 42, 43, respectively which project inwardly toward the axis of the tub, and in each seat I insert a blade-like agitator 44, preferably made as a suitably shaped piece of wood.

To distinguish the agitators in the lower series from those in the upper series in the tub, the latter are indicated at 44^x, the set of agitators 44 being inclined in one direction while the agitators 44^x are inclined in the opposite direction, and if the rotation of the stirrer shaft is represented by the arrow 100, Figs. 1 and 2, the rotation of the tub will be in the opposite direction, or as indicated by the arrow 150, Fig. 2.

Wetting and swelling of the wood of which the stirrers and agitators are made will cause them to bind and hold tightly in their seats, so that no other fastening means is necessary, the seats being of such size that the stirrer or agitator, as the case may be, can be driven into it with a light hammer blow.

The inclination of the agitators 44 is such as tends to lift the contents of the tub from its bottom towards its top, while the opposite inclination of the agitators 44^x tends to press the contents downward, thus keeping the skins or other articles in the tub in constant agitation and movement during the rotation of the latter, the stirrers carried by the shaft 29 coöperating to maintain continuous movement and agitation of the tub contents.

The relatively long distance between the paths of movement of the agitators and the stirrers totally obviates any chance of tearing or otherwise injuring the articles being washed, for the distance is too great to admit of an article being caught at one and the same time by an agitator on the tub and a stirrer on the shaft 29.

In actual practice the tub will have a diameter of about twelve feet and a depth of about six feet, and in order to provide ready means for taking the skins or other articles into and out of the tub, I have provided the same with an opening 45 in its side wall, said opening being normally closed by a door 46 hinged at its bottom edge at 47 to the tub wall and opening outward, the door being held securely in closed position by suitable latches 48, the general construction of the door and latches being very similar to the construction used in refrigerator doors.

When the door is swung down, it may be used as a gang-way for the opening 45.

The portion of the tub through which the door opening is cut is strengthened by a heavy iron band *a'*, the ends of which are brought around to the sides of the door-opening, and then turned in against the

same, as at a^2 , Fig. 4, and secured in place by suitable fastenings a^3 , the extremities of the band being turned back at a^4 against the inner face of the wall of the tub. This serves to rigidly bind and hold the band a' in place while at the same time permitting the opening for the door, and not interfering in any way with the door itself.

In the use of the apparatus, the tub will be filled with the skins or other articles which are to be washed, and after the tub has been properly loaded, the door 46 will be closed and fastened, and water or other washing fluid will be let into the tub through the pipe 24, Fig. 1.

When the fluid has nearly reached the top of the tub, the plug 21 will be withdrawn, and the apparatus set in motion to rotate the tub and stirrer shaft in opposite directions, the inflow of cleansing fluid being regulated to the rate of discharge, so that the continuously agitated objects to be washed will be constantly subjected to the action of the fresh incoming fluid.

The dirty fluid escapes from the tub through the discharge pipe 22.

The tub and stirrer shafts are rotated at slow speed, the operation being continued as long as may be necessary to effect a thorough cleansing of the articles.

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

1. In apparatus of the class described, a rotatable tub having agitators extended inward from its side walls and inclined with relation to the axis of the tub, a depending fixedly attached, central spindle at the bottom of the tub, a spherical bearing to vertically sustain the spindle, a fixed tubular bearing to sustain the spindle laterally, means to rotate the tub, a step bearing fixed within the tub co-axial with the spindle, an upright stirrer shaft extended into the tub, vertically sustained by the step bearing and maintained by it in alinement with the tub spindle, and means to rotate the shaft oppositely to the tub.

2. In apparatus of the class described, a centrally supported, positively rotated tub, a plurality of vertically separated series of agitators on the side walls thereof, the agitators of one series being inclined in one direction and those of the other series in the opposite direction, a stirrer shaft extended into the tub and having stirrers attached thereto and radially extended therefrom, a step bearing in the tub to vertically support and maintain the shaft in alinement with the axis of rotation of the tub, and means to positively rotate the shaft oppositely to the tub.

3. In apparatus of the class described, a tub having a central opening in its bottom, a gear having a shouldered hub inserted in said opening, an axial spindle depending from the

lower face of the gear, a step bearing having an extended base resting upon the tub bottom co-axial with the spindle, bolts rigidly connecting the bearing base, gear, and tub bottom, and a combined thrust and lateral bearing for and into which the spindle is extended.

4. In apparatus of the class described, a tub having inwardly extended agitators on its side walls, a depending spindle rigidly secured to the bottom of the tub, a ball on which the spindle rests, means to laterally support the spindle, an upright shaft, a series of radially extended stirrers thereon, means to rotate said shaft, a step bearing on the bottom of the tub, to vertically support and maintain the shaft in the axis of rotation of said tub, and means to rotate the latter independently of the shaft.

5. A rotatable tub for washing apparatus, comprising a bottom, and side walls, the latter having an opening therein, a door to close said opening when the tub is in use, a series of castings rigidly attached to the inner faces of the side walls, each casting having an elongated seat, and blade-like agitators mounted in the seats and extending inwardly toward the center of the tub.

6. A rotatable, non-metallic tub for washing apparatus, series of metallic seats mounted on the inner faces of its side walls, and blade-like agitators mounted in the seats and extended inward toward the center of the tub.

7. A rotatable, non-metallic tub for washing apparatus, series of metallic seats mounted on the inner faces of its side walls, the seats of one series being inclined in one direction and those in the other series in the opposite direction, and non-metallic blade-like agitators inserted in the seats and projecting inward from the side walls of the tub.

8. In apparatus of the class described, a tub having two series of oppositely inclined and inwardly extended agitators mounted on its side walls, a central depending spindle to support the tub and to which it is rigidly secured, an upright shaft extended into the tub, a casting fast on the shaft and having series of seats, outwardly projecting stirrers mounted in the seats, a step bearing fast on the bottom of the tub in alinement with the spindle, and a projection on the bottom of the stirrer casting to enter said bearing, to vertically sustain the shaft and maintain it co-axial with the tub spindle, combined with driving gears fast on the spindle and shaft, respectively.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES DUFOUR.

Witnesses:

THOMAS J. DRUMMOND,
JOHN C. EDWARDS.