

(No Model.)

A. SCHULTZ.  
MASHING MACHINE.

No. 531,601.

Patented Dec. 25, 1894.

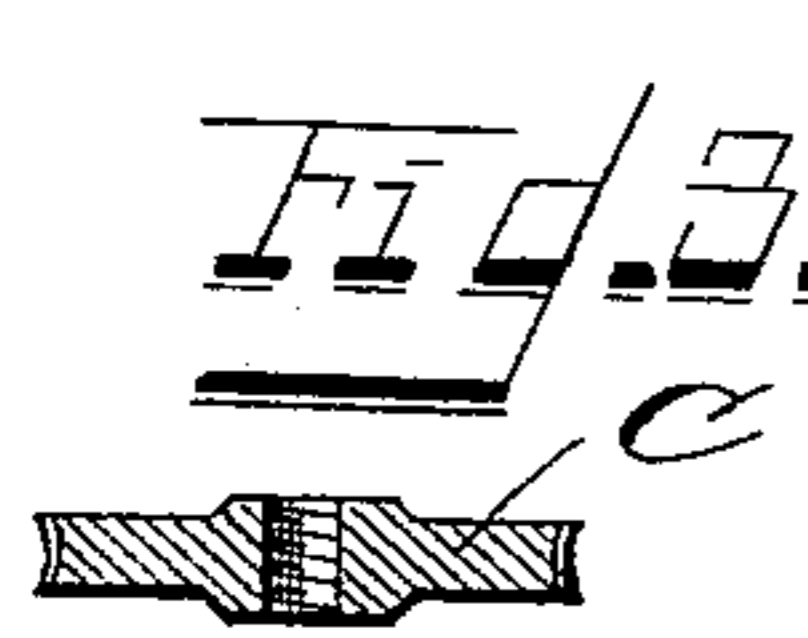
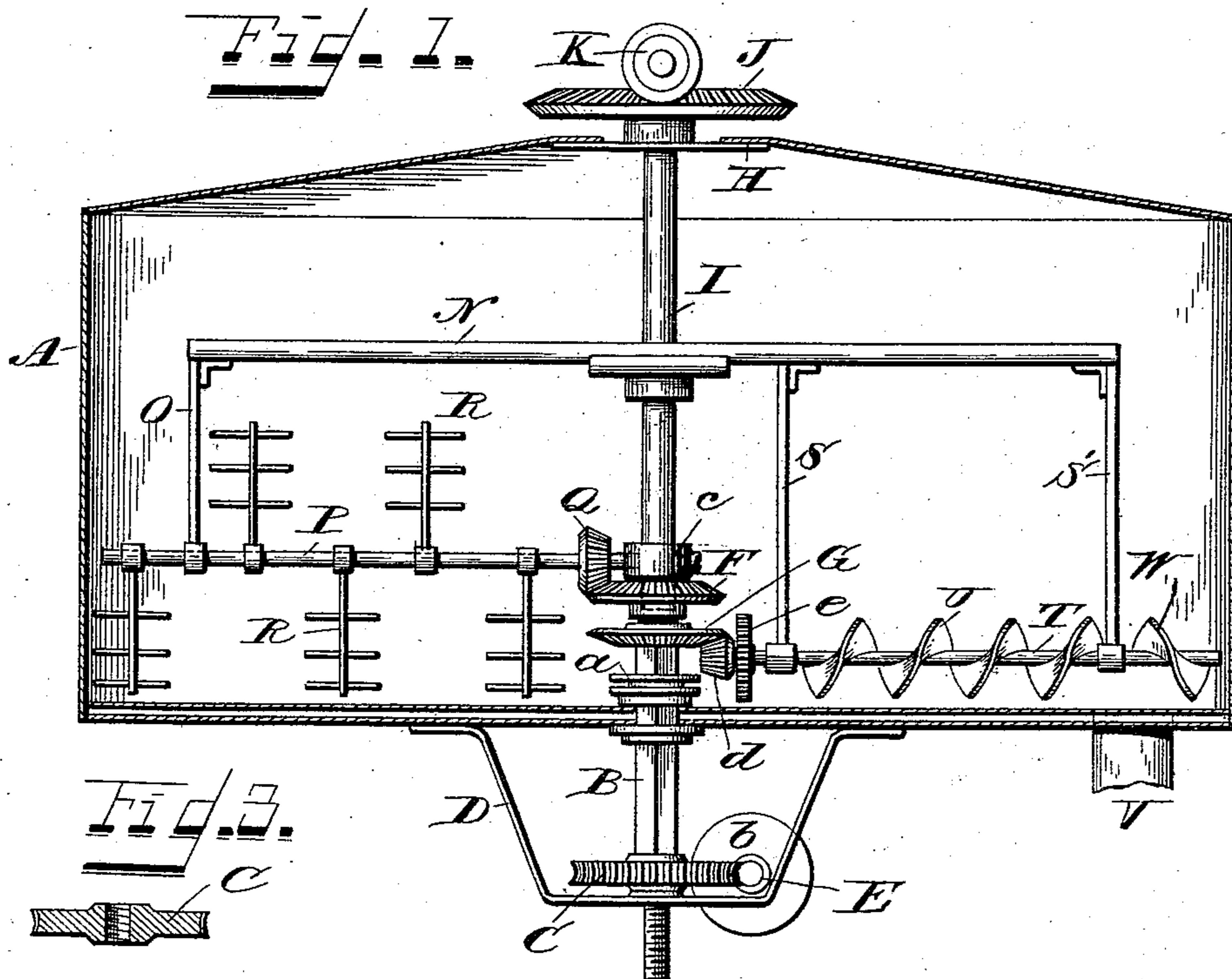
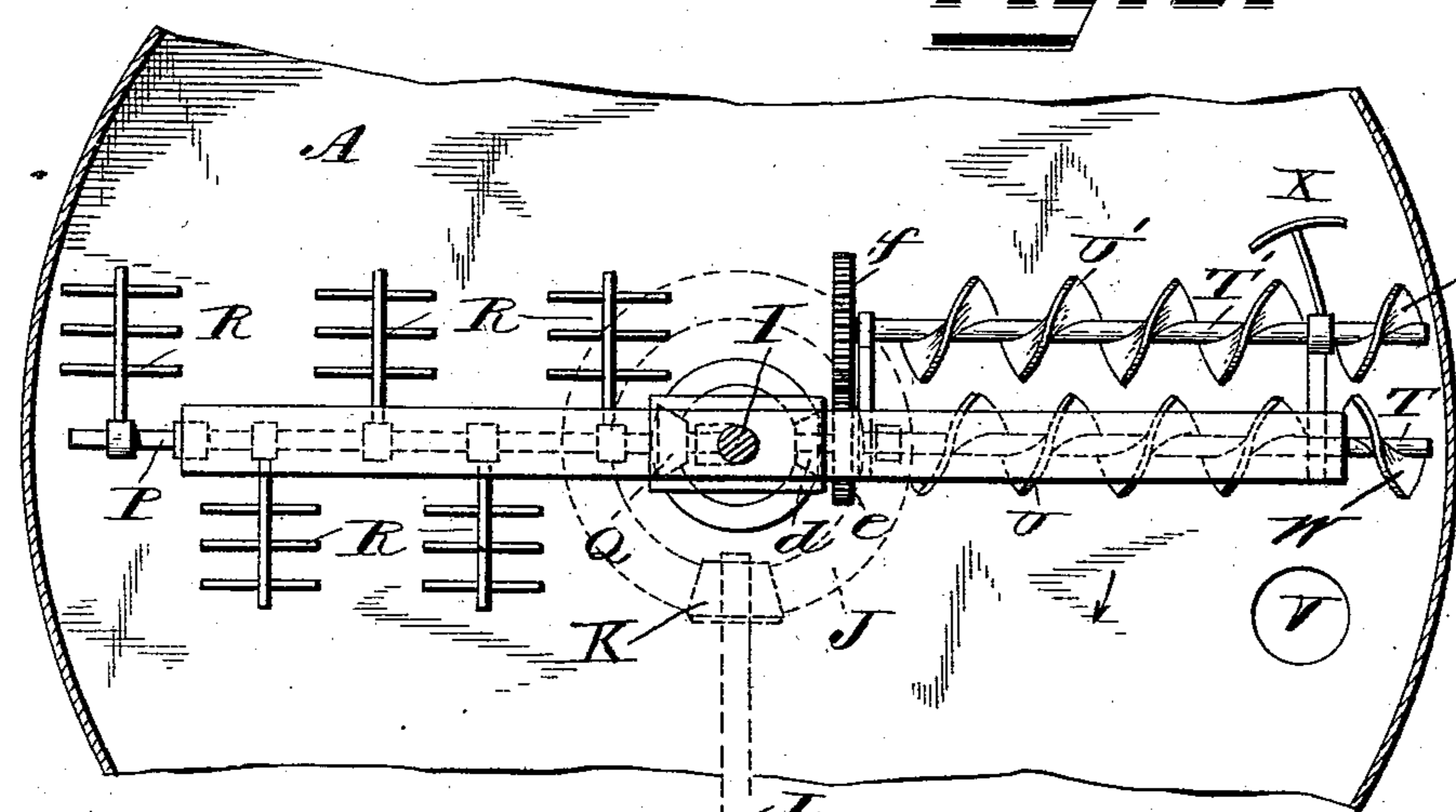


Fig. 2.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

ADAM SCHULTZ, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO JOHN DECK, OF SAME PLACE.

## MASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 531,601, dated December 25, 1894.

Application filed May 25, 1893. Renewed November 21, 1894. Serial No. 529,527. (No model.)

*To all whom it may concern:*

Be it known that I, ADAM SCHULTZ, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Mashing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to the apparatus employed in mash tubs for mixing the mash and for removing the solid residue after the beer or wort has been drawn off, and it has for its object the improved construction of such apparatus whereby its efficiency of action is increased.

The novelty of my invention will be hereinafter set forth and specifically pointed out in the claims.

In the accompanying drawings:—Figure 1 is a central sectional elevation of a mashing machine embodying my invention. Fig. 2 is a broken plan view of the same. Fig. 3 is a detail sectional view of the adjusting worm-wheel.

The same letters of reference are used to indicate identical parts in all the figures.

A is a cylindrical mash tub of the usual or any suitable construction having passed through a central stuffing box *a* at its bottom a square or flattened non-revoluble shaft B whose lower projecting end is threaded and engages the bore of a worm wheel C supported on a bracket D on the under side of the tub.

The worm wheel C is engaged by a worm *b* on a shaft E actuated by hand or power at certain times to raise and lower the shaft B. On the upper end of the shaft B, within the tub, are secured two non-revoluble beveled gears F and G.

Journalled in a cross piece or other support H at the top of the tub is a vertical shaft I in line with the shaft B and having its lower end stepped in the bore of the gear F. The upper end of the shaft I is feathered through a beveled gear J supported on the piece H and with which a pinion K, fast on a shaft L, driven by a pulley M or other means, con-

stantly meshes to rotate the shaft I. The shaft L will, in practice, be supported in a tilting journal box or be provided with a suitable joint to permit its inner end, carrying the pinion K, to be raised or lowered with the shaft I.

Fast to the shaft I within the tub, near its top is a horizontal bar N, to one end of which is secured a pendent arm O in the lower end of which is journalled a horizontal shaft P whose inner end is journalled in a sleeve *c* fast on the shaft I just above the gear F. A beveled pinion Q, fast on the shaft P, meshes with the gear F, and fast on the shaft P, are the usual suitable stirrer arms R. On the opposite side of the bar N are two pendent arms S, S', one at its outer end and one near the shaft I, in the lower ends of which is journalled a shaft T carrying a worm conveyer U extending from near the center of the tub out over the discharge trap V, in the bottom of the tub. A short conveyer W, with its pitch oppositely set to that of the conveyer U, is secured upon the outer end of the shaft T. A beveled pinion *d* fast on the inner end of the shaft T meshes with the gear G and beside this pinion is a gear wheel *e* likewise fast on the shaft T. A second conveyer shaft T' is journalled in bracket arms S S', Fig. 2, and carries conveyers U' W' similar to those on the shaft T and parallel therewith, and the gear *e* meshes with a similar gear *f* fast on the shaft T'. The outer bracket arm S' carries a scraper X which extends down near the bottom of the tub.

The operation of the apparatus above described, is as follows, the arrow in Fig. 2 indicating the direction of rotation of the shaft I and the parts carried thereby: When the mash is first placed in the tub the parts occupy the position shown in Fig. 1, and the gate of the trap V is closed. The shaft I is then rotated, thereby carrying the bar N and its connected parts with it. The shaft P is rotated through the medium of the stationary gear F and pinion Q traveling around it to revolve the stirrers R as they travel around the tub. At the same time through the medium of the stationary gear G, pinion *d* and intermeshing gears *e f* the conveyers are ro-

tated in opposite directions as they travel around the tub thereby forcing the mixture first outward toward the side of the tub by the action of conveyer U, and then inward toward the center by the action of conveyer U' as will be readily understood. When the mash has been sufficiently mixed and it is time to draw off the beer or wort, the shaft I is stopped and the gate of trap V opened to draw off the liquor. When the tub is well drained the residue of grain or meal settles to the bottom of the tub in a rather compact mass usually with a crust on its top and then, through the medium of the shaft E, worm *b* and worm wheel C, the shaft B is raised, thereby raising the shaft I and all of the machinery carried thereby until the conveyers are above the mass in the tub. The shaft B is then gradually lowered and the shaft I again put in motion.

The first action of the conveyers and stirrers on lowering the shaft B, is to break up the crust and then as the parts descend to quickly work out the contents of the tub through the trap V. By means of the conveyers W W' the residue is prevented from banking around the edge of the tub for these conveyers work it back over the trap as will be readily understood.

While I prefer the use of two conveyer shafts with conveyers thereon, yet a large part of the benefit of my invention would be obtained by the use of but one conveyer shaft with conveyers thereon and in this respect I do not wish my invention to be limited to the use of two conveyer shafts.

Having thus fully described my invention, I claim—

1. In a mashing machine, the combination with the non-revoluble shaft B provided with the gears F and G, of the revoluble shaft I, the horizontal bar N secured to said shaft I and extending on opposite sides thereof, a

revoluble stirring device supported from said bar N on one side of said shaft I and operated from said gear F, and a revoluble conveying device supported from the said bar N on the other side of said shaft I and operated by the said gear G.

2. In a mashing machine, the combination with the non-revoluble shaft B provided with the gears F and G, and having a threaded-lower end, the worm-wheel C internally threaded to engage the threaded end of said shaft, the shaft E having worm *b* meshing with said worm-wheel, and the bracket D on which said worm-wheel is supported in such a manner as to be free to turn but not to move vertically, of the revoluble shaft I, the horizontal bar N secured to said shaft I and extending on opposite sides thereof, a revoluble stirring device supported from said bar N on one side of said shaft I and operated from said gear F, and a revoluble conveying device supported from the said bar N on the other side of said shaft I and operated by the said gear G.

3. In a mashing machine, the combination of a central non-revoluble shaft B, means for raising and lowering the same, the gears F, G, fast on said shaft, the revoluble power shaft I in line with and carried on the shaft B, the bar N carried by the shaft I, the shaft P carried thereby and having stirrer arms R and a pinion Q meshing with the gear F, the conveyer shaft T carried by the bar N and having conveyers U W and pinion *d* meshing with the gear G, and a second conveyer shaft T' having conveyers U' W' and a gear *f* meshing with a gear *e* on the shaft T, substantially as described.

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Witnesses:

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