No. 739,142. PATENTED SEPT. 15, 1903.

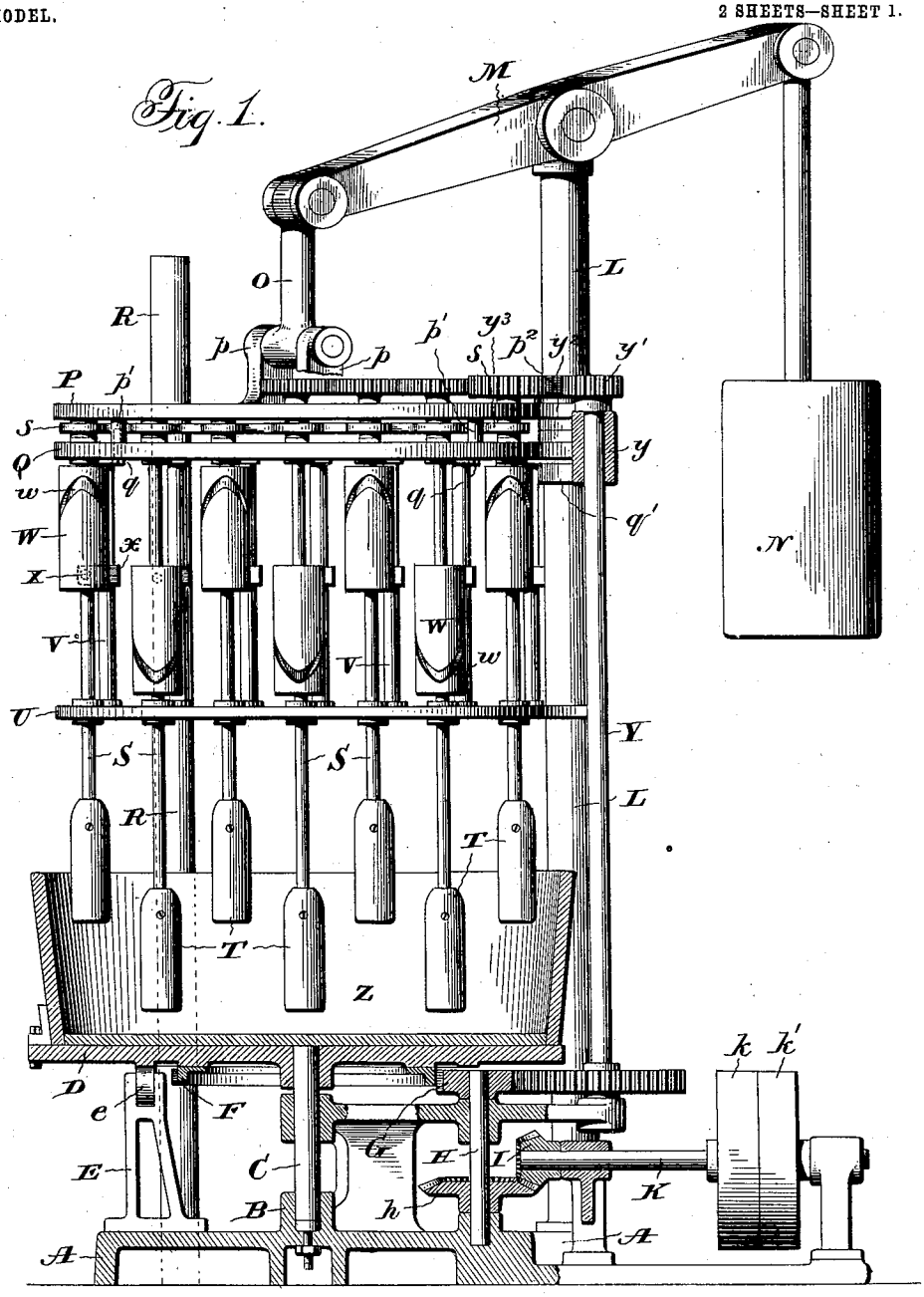
M. E. BEASLEY.

KNEADING MACHINE.

APPLICATION FILED JAN. 20, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



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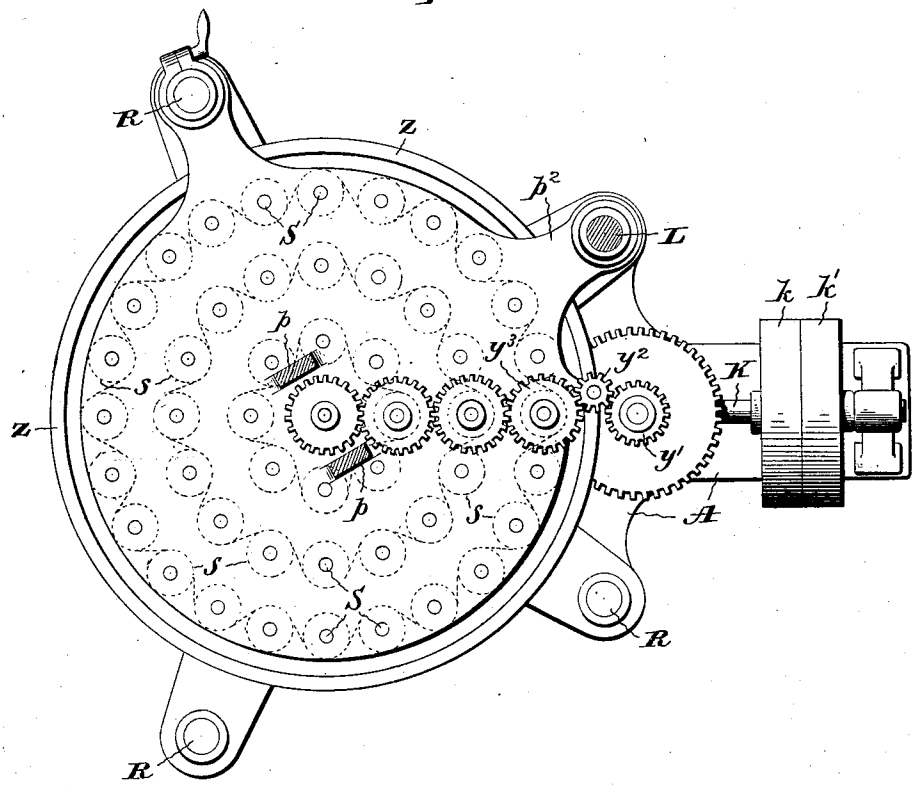
KNEADING MACHINE.

APPLICATION FILED JAN. 20, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.



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No. 739,142. Patented September 15, 1903.

UNITED STATES PATENT OFFICE.

MARIA E. BEASLEY, OF NEW YORK, N. Y.

KNEADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 739,142, dated September 15, 1903.

Application filed January 20, 1903. Serial No. 139,781. (No model.)

To all whom it may concern:

Be it known that I, MARIA E. BEASLEY, of New York, in the county of New York, and in the State of New York, have invented a certain new and useful Improvement in Kneading-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of a kneading-machine embodying my invention; and Fig. 2 is a plan view of the same.

The object of my invention has been to provide a kneading-machine which shall be so thorough and uniform in its action that the maximum amount of dough shall be produced from any given amount of flour; and to such end my invention consists in the kneading-machine hereinafter specified.

In carrying my invention into practice I provide a base A, having a central bearing B, in which is mounted a vertical shaft C, that carries at its upper end a circular table D. The table is supported and steadied toward its outer edge by pillar-bearings E, mounted upon the base-plate, and supporting-rolls *e*, which engage the under surface of the table.

A gear F is formed upon or secured under the table concentric with the shaft C, and said gear is engaged by a pinion G, that is carried by the upper end of a shaft H, mounted in bearings in the frame. The shaft H is provided with a bevel-gear *h*, that is engaged by a bevel-pinion I, carried by a driving-shaft K, mounted in horizontal bearings on the base, such shaft being provided with the usual fast-and-loose pulleys *k* and *k'*. A column L rises from the base and upon its upper end supports the fulcrum of a lever M, the latter having hung upon its outer end a weight N and carrying at its inner end a link O. The said link is pivoted between lugs *p* on a horizontal plate P, that is preferably substantially circular in outline. Beneath the plate P is a plate Q of substantially the same shape, and the two plates are attached together at a fixed distance apart, as by screws *q*, passing through the plate Q and engaging posts *p'* upon the plate P. The said plates are preferably provided with arms p^2 and *q'*, which are provided with openings to receive the column L and with similar arms to receive other columns R, mounted vertically upon the frame. If desired, one or more of said arms can be split and a hand-screw be provided to draw the two sections thus formed about the column embraced by the respective arm for the purpose of insuring a snug fit upon the said column and also, if desired, of securing the said plates at any desired level upon the columns.

A plurality of shafts S are vertically mounted in bearings formed in the plates P and Q, and belt-pulleys *s* are mounted on such shafts between the plates P and Q, the said pulleys being splined upon the said shafts. The shafts S are preferably arranged in circular series, the series being quite close together, although the arrangement can, if desired, be varied, as by using a staggered arrangement. Each shaft S is provided at its lower end with a plunger T, which can be of any desired shape. For instance, it can be circular, star shape, or polygonal. A plate U, preferably similar in size and shape to the plates P and Q, is suspended beneath such plates, as by a series of vertical rods V, and such plate is provided with openings for the shafts S. Each shaft S is provided with a cylindrical cam-body W, having a path-cam *w* formed in its periphery, such cam passing alternately up and down in diagonal directions. Each path-cam is engaged by an antifriction-roll or, if desired, by a plain pin X, which is fixedly mounted, as upon a block *x*, secured to one of the vertical rods V. A vertical shaft Y is mounted in a lower bearing formed on the frame and in an upper bearing *y*, formed on or attached to the plates P and Q, such shaft being driven by a gear at its lower end that meshes with the pinion G, and such shaft has splined upon it a gear *y'*, which meshes with an idler y^2, that in its turn meshes with a gear y^3, splined upon the nearest shaft S, means being thus provided for driving one of the shafts S. All the other shafts S may be driven by a belt passing about one of the belt-pulleys *s* and about the other belt-pulley of the remaining shafts S, or one shaft S at each series may be driven by gears meshing with the gear y^3 and each series of shafts be driven by its own belt.

A pan Z, preferably circular in form, is mounted upon the table D beneath the plungers on the shafts S. The pan may be made removable from the table and can be of any desired construction. Means for the introduction of water or milk and flour can be provided.

In the operation of my machine as above illustrated the flour, water, yeast, and other constituents of the dough are placed in the pan Z in the desired proportions and preferably distributed in uniform layers in the said pan. During this operation or during the placing of the pan upon the table the lever M stands, preferably, rocked, so that the link O and with it the plates P and Q and U are raised, thus raising the plungers above the level of the pan. This operation is rendered easy by the action of the counterweight N. The lever M is then rocked in the opposite direction, bringing the plungers down into the pan. The cams W are preferably so arranged that each alternate plunger is down while its neighbors are up. The driving-shaft is then set in motion, and the pan is revolved by means of the gearing driving the table D. At the same time the plungers are revolved by means of the belt and toothed gearing at their upper ends, and they are caused to rise and fall by the action of the cams W on the pins X. Owing to the revolution of the pan, every portion of the dough is brought under the operation of the plungers, and a most thorough mixing of the flour, water, yeast, and other constituents of the dough results. At the same time the twisting or turning of the plungers causes the dough to be stretched or drawn apart between each two plungers, and this action is further increased by the fact that adjacent plungers are always moving in opposite directions. The result of the operation of my kneading-machine is that every portion of the ingredients is thoroughly mixed, and a maximum amount of water is taken up, so that a much greater weight of dough is produced from a given amount of flour than by any other machine of which I am aware.

It is obvious that various changes can be made in the above-illustrated construction which will be within the scope of my invention.

Having thus described my invention, what I claim is—

1. In kneading-machines, the combination of a receptacle, a plurality of plungers, and means for rotating and reciprocating said plungers in said receptacle.

2. In a kneading-machine, the combination of a receptacle, and a plunger, said plunger having both a rotating and a reciprocating motion.

3. In a kneading-machine, the combination of a receptacle, and a series of plungers operating therein, and means for rotating said plungers and for reciprocating the alternate plungers in opposite directions.

4. In a kneading-machine, the combination of a rotating receptacle, and a series of plungers operating therein, and means for rotating and reciprocating said plungers.

5. In a kneading-machine, the combination of a rotating receptacle, plungers operating therein, and means for simultaneously rotating and reciprocating said plungers.

6. In a kneading-machine, the combination of a rotating receptacle, plungers operating therein, and means for simultaneously rotating said plungers, and for reciprocating the same in opposite directions.

7. In a kneading-machine, the combination of a receptacle, a vertically-movable framework, a series of vertical shafts journaled in said framework, plungers upon the lower ends of said shafts, and means for rotating and reciprocating said plungers.

8. In a kneading-machine, the combination of a receptacle, a shaft vertically mounted above said receptacle, a plunger on the lower end of said shaft, a cam-body on such shaft having a cam therein, a stationary pin that is adapted to be engaged by said cam to cause the shaft to rise and fall, and means for rotating said shaft, whereby said plunger is caused to rise and fall, and also to rotate.

9. In a kneading-machine, the combination of a receptacle, a vertically-movable frame, a series of vertical shafts journaled in said frame, each of such shafts carrying a plunger at its lower end, a cam-body upon each of such shafts, stationary projections on said frame which are adapted to be engaged by said cam-bodies, and means for rotating said series of shafts, whereby said plungers are caused to rotate and to rise and fall.

In testimony that I claim the foregoing I have hereunto set my hand.

MARIA E. BEASLEY.

Witnesses:
R. W. MASON,
HAROLD WALKER.