

UNITED STATES PATENT OFFICE.

LOUIS DURAND, OF DUMONT, NEW JERSEY, ASSIGNOR TO THE AMERICAN EXCHANGE NATIONAL BANK OF NEW YORK, A CORPORATION.

DOUGH-KNEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 760,388, dated May 17, 1904.

Application filed September 8, 1902. Renewed August 4, 1903. Serial No. 168,204. (No model.)

To all whom it may concern:

Be it known that I, LOUIS DURAND, a citizen of the United States, and a resident of Dumont, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Dough-Kneading Machines, of which the following is a specification.

This invention relates to that class of dough-making machines which are presented in the form of small machines adapted for family use and which involve a horizontally-rotatable pan containing a stirrer and kneader revolvable on separate axes, an illustration of such type of machine being disclosed in my Patent No. 485,096, dated October 25, 1892.

The principal objects of the present invention are the simplification of the construction generally, increased convenience and efficiency of operation, as well as facility for cleaning the pan, stirrer, and kneader, and the location of both the stirrer and kneader gearing external to and above the pan.

There are other important structural features connected with the improved dough-machine which, in addition to those alluded to, are clearly set forth in the subsequent detailed description.

In the accompanying drawings, forming part of this specification, Figure 1 represents, in side elevation and partly in section, the improved dough-making machine adjusted on the end portion of a table-top. Fig. 2 is a plan view of the machine as adjusted in Fig. 1. Fig. 3 is a detail view, partly sectioned, and disclosing in elevation certain bevel-gear bearings detached from the frame designed for the support thereof. Fig. 4 is an outer end view of the kneader-blade.

Similar reference characters are employed to designate corresponding parts in the several figures wherein they occur.

The pan A has a central vertical cone a' , provided with a lower interior bridge a^2 and upper hub b , in the lower end of which latter is secured the upper end of a vertical shaft a , centrally located within the cone and bearing in and preferably connected to the bridge, the extremity of the shaft below said bridge

being stepped in the bearing b , on the upper horizontal clamping member B' of the supporting-frame B, which is provided with the under member carrying the clamping-screw B^2 .

Mounted on a small platform at the upper end of the frame B is a part C, provided with bearings for the primary elements of the operating-gear, said part being attached in position through the medium of bolts d d' , pivotally secured on the under side of the platform and adapted to be swung up to engage and be clamped between lugs e e' , presented by the base of the part C, and also by the platform.

The part C overhangs the pan to a considerable extent and carries at its inner end a shallow horizontal casing C' , a portion of which is over the vertical center of the pan, while the other portion of the casing is disposed radially at the side opposite to that at which the part C is located. This casing at the point of a bottom bearing g rests loosely upon the hub h , a combination bevel and spur gear D within the casing being rigidly secured on a stub-shaft f , depending through said bearing and provided with a square lower end engaging with the corresponding-shaped upper part of the socket within said hub. The spur part of the gear D meshes with the spur-gear F in the radial portion of the casing, said gear F being secured on the upper end of a vertical shaft j , turning loosely in an extended tubular bearing C^2 , suspended from the under side of the casing. On the lower extremity of the shaft j at the end of the bearing is secured the stirrer-blade G of open character and of such dimensions that its outer downwardly-converging edges will move in close parallel relation both with the exterior of the cone and inner surface of the pan side.

The beveled portion of the gear D meshes with a driving-pinion H, secured on the inner end of a shaft k , extending through the casing-wall and projecting a short distance within the casing interior, said shaft being revolvably contained in an elongated horizontal bearing C^3 , integrally carried by the part C, the other end portion of the shaft extending be-

yond the outer end of said bearing for the securement of an operating-crank J and bevel-pinion K, the latter meshing with a bevel-gear L on the upper end of an inwardly-inclined shaft *s*, mounted in a correspondingly-inclined bearing C⁴, also integrally carried by the part C and normally disposed at one side of the main or vertical portion of the frame B. Secured on the lower projecting end of the shaft *s* is the kneader P of open character and provided with angularly-disposed extended straight edges *p p' p'*, adapted to alternately move into and out of close parallel proximity with respect to the cone exterior and inner surface of the pan side at certain points thereof.

At suitable points along the upper edge of the vertical wall of the casing C' are portions *c*, having openings tapped for the reception of bolts designed to secure a cover C⁵ upon the casing, said casing being arched to provide clearance for the hub of the wheel F and upper end of the shaft *j* and also for the location of an under bearing *c'* for receiving the upward thrust of the shaft *a* and contributing to support it in position.

In operating the machine motion is imparted to the shaft *k* by the crank J, causing the pan A to revolve in a horizontal plane, the motion thus acquired being transmitted to the shaft *j* to revolve the stirrer G in a direction opposite to that of the pan. Coincidentally the shaft *s* is rotated through the medium of the bevel-gearing K L and rotates the kneader P also in a direction opposite to the pan movement. The stirrer effects the proper mixing of the material within the pan, while the kneader overturns and kneads such material. The peculiar disposition of the edges *p p'* of the stirrer causes them to move into and out of close parallel relation with the cone and pan side, thus promoting the proper shifting of the material and preventing the undesirable lodgment at either of said points. When the batch of dough is properly developed, the clamp-bolts *d d'* are loosened and swung out of engagement with the lugs *e*, whereupon the part C, together with the casing C' and all the gears and other features carried by said part and casing, can be completely removed from position, leaving the pan, with its dough, convenient for the removal of the latter and subsequent cleaning of the pan. The disconnection of the part C and casing C' also greatly facilitates the cleaning of the stirrer and kneader blades. For further use the part C and casing C', with their appurtenances, are restored to their former positions and securely held by the adjustment of the bolts *d d'*.

It will be appreciated from the foregoing description that the improved machine is not only simple and durable, as well as highly useful, but that it can when required be readily taken apart and cleaned. Furthermore, with the exception of the unobjectionable arrange-

ment of the shaft *a* and the stirrer and kneader, all the moving and operating parts are outside of the pan.

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

1. In a dough-making machine, the combination with a pan and a juxtaposed frame, of a part detachably connected to the frame and carrying conjointly a stirrer and kneader, both within the pan, and stirrer and kneader actuating means including gearing also carried by said part, said gearing being entirely outside of the pan.

2. In a dough-making machine, the combination with a pan and a juxtaposed frame, of a part detachably connected to the frame and carrying conjointly a stirrer and kneader, both within the pan, stirrer and kneader actuating means including gearing also carried by said part, said gearing being entirely outside of the pan, and provision operable from said actuating means for horizontally rotating the pan.

3. In a dough-making machine, the combination with a pan and a juxtaposed frame, of a part detachably connected to the frame and carrying a kneader, the latter within the pan, a casing above the pan and carried by and removable with the said part, a stirrer suspended from said casing, and stirrer and kneader actuating means also supported by said part and including gearing within the casing for revolving the stirrer, all of the said actuating means as well as the casing and its gearing being entirely outside of the pan.

4. In a dough-making machine, the combination with a horizontally-rotatable pan, its central shaft, and a juxtaposed frame, of a part detachably connected to the frame and carrying a kneader, the latter within the pan, a casing above the pan and carried by and removable with the said part, a stirrer suspended from said casing, and stirrer and kneader actuating means also supported by said part and including gearing within the casing for revolving the stirrer and pan-shaft, all of said actuating means including the casing and its gearing being entirely outside of the pan-shaft.

5. In a dough-making machine, the combination with a pan and a juxtaposed frame, of a part carrying a kneader, stirrer and operating means therefor, and including gearing independently of both the pan and frame, all of said operating means being entirely outside of the pan, and the said part being supported by a detachable connection with the frame.

6. In a dough-making machine, the supporting-frame and part C removable therefrom, the pan with the center cone and upper hub and shaft *a*, extending above the top of the pan under the casing C', and arranged to lock with the shaft *f*, together with suitable operating means carried by the part C.

7. In a dough-making machine, the combination with a pan and supporting-frame, of the part C, provided with an angle-bearing and shaft s, the latter carrying an angle-stirrer P, operable by a bevel-gear attached to the shaft s, outside of the supporting-frame and engaging with a bevel-pinion on a driving-shaft also carried by the part C.

8. In a dough-making machine, the combination with the revoluble pan, and part C, a shaft supported by said part C, and having a beveled driving-pinion, a combined bevel and spur gear D, with the bevel portion of which said pinion meshes, a spur-gear meshing with

the spur portion of the gear D, a stirrer actuated by said spur-gear, a casing entirely outside of the pan, and supported by the part C, and containing said beveled driving-pinion, bevel and spur gear D, and spur-gear, and means also outside of the pan for imparting motion to the gearing and stirrer.

Signed at New York, in the county of New York and State of New York, this 5th day of September, A. D. 1902.

LOUIS DURAND.

Witnesses:

ESTELLE MACCLOSKEY,
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