

(No Model.)

G. M. & F. J. BALL.
KNEADING MACHINE.

No. 576,296.

Patented Feb. 2, 1897.

Fig. 1.

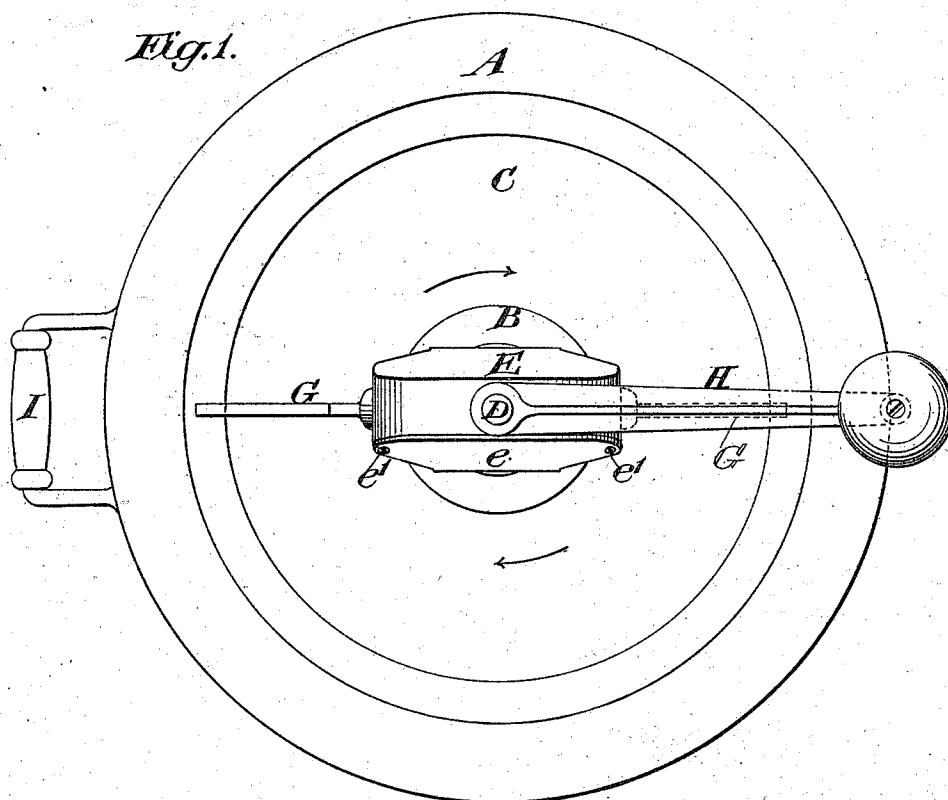


Fig. 2.

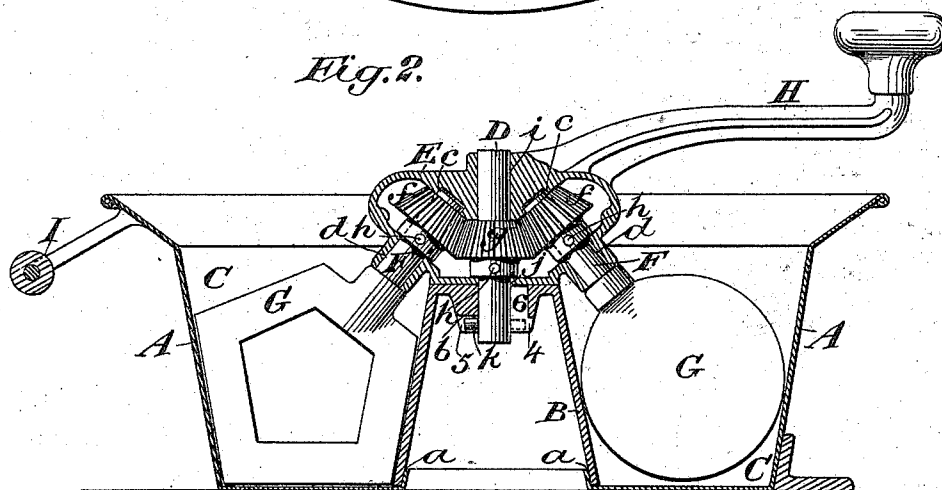
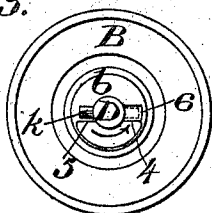


Fig. 3.



Witnesses:-
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UNITED STATES PATENT OFFICE.

GEORGE M. BALL AND FREDERIC J. BALL, OF BROOKLYN, NEW YORK.

KNEADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 576,296, dated February 2, 1897.

Application filed June 12, 1896. Serial No. 595,259. (No model.)

To all whom it may concern:

Be it known that we, GEORGE M. BALL and FREDERIC J. BALL, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Kneading-Machines, of which the following is a specification.

This invention is more especially adapted to kneading-machines of small size suitable for family use, although machines embodying the invention may be of larger capacity.

We will first describe the invention in detail with reference to the drawings of a machine embodying the improvement, and afterward point out its novelty in claims.

Figure 1 represents a plan view of the machine; Fig. 2, a central vertical section of the same, and Fig. 3 a plan of certain details which will be hereinafter explained.

A represents a pan of circular form, in the center of which is an upright hollow conical standard B, between which and the sides of the pan is formed an annular kneading-trough C. The pan A may be of sheet metal and the standard B may be of cast-iron and united with the pan in any convenient manner, as by soldering at *a* around the base of the standard. In the center of the crown of the standard B there is formed at *b* the lower bearing for an upright center shaft D, which has also upper and lower bearings at *i* and *j* in the top and bottom of a rotary metal box E, which is supported upon the top of the standard B, but is loose upon both the standard and the center shaft. This box contains also the bearings *c* and *d* for two inclined side shafts or pivots F F, which carry rotary kneading-blades G G, of any suitable form, which are dependent from the said shafts within the trough C. On each shaft or pivot F there is fast a bevel-gear *f*, gearing with a bevel-gear *g*, fast on the center shaft D, which has applied to it means hereinafter described to prevent it from turning in the pan-standard B.

The box E is represented as having one side *e* made separate and attached by screws *e'* and removable for access to the interior and to permit the introduction of the center and side gears *f f g*. The shafts D F F are represented as inserted through their respective lower bearings *j d d* in the box E and through the hubs of the gears, the latter being secured

to the shafts by pins *h*, which are inserted through them and the gears, the latter fitting between the top and bottom of the box and thus holding the shafts in place lengthwise. The rotary box E has cast with or directly attached to it a hand-crank H, for the purpose of turning it and carrying the kneading-blades around the pan while the latter is stationary. The gears *f f*, turning with the box around the gear *g*, while the pan, the shaft D, and the last-mentioned gear are stationary, receive a rotary motion on their own axes and so impart a rotary motion to the blades while the latter revolve around the pan. The pan may be set upon an ordinary kitchen-table or any convenient support upon which it may be kept stationary by any suitable means. It is represented as provided with a lug at its bottom for the reception of a screw-clamp to fasten it to the table or support.

The kneading apparatus, consisting of the box E and its contained shafts and gearing, the kneading-blades, and crank-handle, are all removable together from the pan A, which, being thus unincumbered, can be used as an ordinary mixing-pan.

The kneading apparatus when detached from the pan can be more easily washed or cleaned and may be kept separate, while the pan may be hung up by the handle I, with which it is represented as provided.

The device which we will now describe for locking the kneading apparatus to the pan for use and for holding the shaft D against turning is shown in Figs. 2 and 3, the latter figure representing an inverted plan of the pan-standard B and the shaft. This device consists of a projection *k*, formed on one side of the shaft, and a downward projection 4 5, formed on and below the bottom of the center shaft-bearing *b* in the pan-standard B. In one side of the bearing *b*, close to the end 4 of the projection 4 5, there is a groove or key-way 6 for the passage of the said projection *k* through the bearing to permit the attachment and detachment of the kneading apparatus.

To attach the kneading apparatus to the pan, the gear-box E, which has the lower end of the center shaft D projecting downward through its bottom, is placed over the standard B and the shaft entered into the bearing

5 *b* with its projection *k* in the groove 6. The
 gear-box being allowed to come down on the
 standard B, the projection *k* on the center
 shaft comes just below the bottom of the bear-
 10 ing *b*, and by turning the handle H, and with
 it the gear-box, in the direction of the arrows
 shown in Figs. 1 and 2 the center shaft is
 caused to turn so far with the gear-box as to
 bring its projection *k* under the bearing *b*, as
 15 shown in Fig. 2, and into contact with the end
 5 of the projection 4 5 on the bearing *b*, as
 shown in Fig. 3. The kneading apparatus is
 thus locked to the pan and the rotation of
 the center shaft and its gear *g* is arrested.
 20 The continued turning of the handle and the
 gear-box then causes the rotation of the
 kneading-blades on their own axes and their
 revolution around the pan.

25 When it is desired to detach the kneading
 apparatus from the pan, it is only necessary
 to turn the handle backward or in the oppo-
 site direction to the arrows represented to
 bring the locking projection *k* on the center
 shaft opposite the groove 6 in the bearing *b*,
 30 when the whole of said apparatus may be
 lifted from the pan.

It may be understood from the foregoing
 description that by the simple device, consist-
 35 ing of the projection *k* on the center shaft and
 the projection 4 5 on the bearing provided
 for the said shaft on the pan, the kneading
 apparatus is not only locked to the pan, but
 the said shaft and the center gear are held
 stationary for the proper operation of said
 40 apparatus, which is effected by the rotation
 of the whole of said apparatus bodily about
 its pivotal connection with the pan, which is
 constituted by the center shaft.

What we claim as our invention is—

40 1. The combination with a kneading-pan,
 of a detachable rotary kneading apparatus
 comprising a central pivot, a fixed support

within the pan for the said kneading appa-
 ratus, and a locking device between said cen-
 tral pivot and said support for attaching said
 45 kneading apparatus to the pan, substantially
 as herein described.

2. The combination of a rotary gear-box
 having a directly-attached hand-crank, a cen-
 ter gear and side gears geared together within
 50 said box, the said side gears having knead-
 ing-blades dependent from them below the
 box, a kneading-pan having a central support
 for said box, and a shaft for said center gear
 constituting a pivotal connection between
 55 said gear-box and the pan, substantially as
 herein described.

3. The combination of a pan having within
 it a central fixed standard, a detachable ro-
 tary gear-box supported on said standard and
 60 containing a central shaft and side shafts
 geared with said central shaft, kneading-
 blades attached to said side shafts, the said
 central standard containing a bearing for the
 lower portion of said central shaft which pro-
 65 jects through the bottom of the gear-box, sub-
 stantially as herein described.

4. The combination of a kneading-pan hav-
 ing within it a fixed central standard, a ro-
 tary kneading apparatus supported on said
 70 standard and comprising a central shaft about
 which said apparatus rotates, a bearing in
 the crown of said standard for the lower part
 of said shaft, and a locking device between
 said shaft and standard consisting of a lateral
 75 projection on said shaft below said bearing
 and a downward projection on the bottom of
 said bearing, substantially as herein de-
 scribed.

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