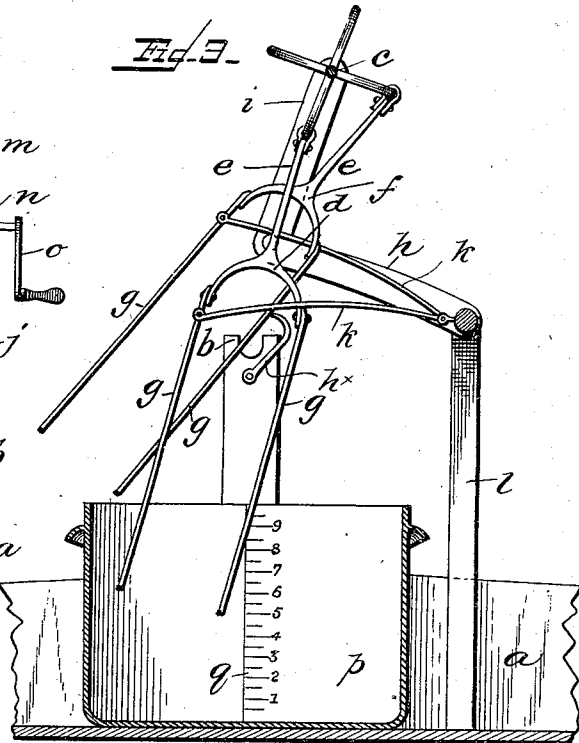
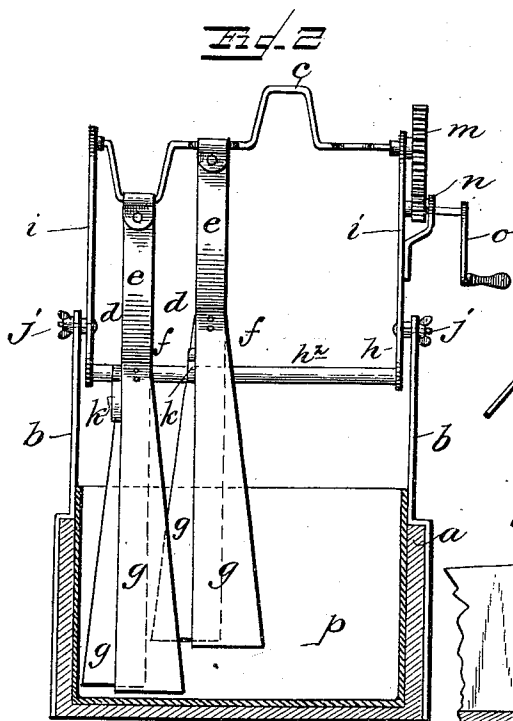
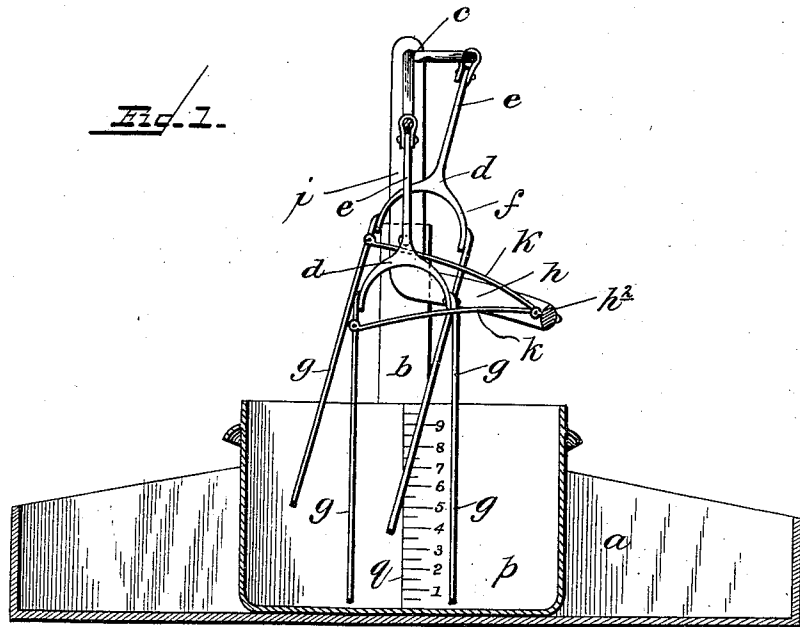


(No Model.)

J. M. RUTHRAUFF.
KNEADING MACHINE.

No. 478,133.

Patented July 5, 1892.



WITNESSES
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UNITED STATES PATENT OFFICE.

JOHN MOSHEIM RUTHRAUFF, OF DIXON, ILLINOIS.

KNEADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 478,133, dated July 5, 1892.

Application filed November 20, 1891. Serial No. 412,555. (No model.)

To all whom it may concern:

Be it known that I, JOHN MOSHEIM RUTHRAUFF, a citizen of the United States, residing at Dixon, in the county of Lee and State of Illinois, have invented a certain new and useful Improvement in Kneading-Machines, of which the following is a full, clear, and exact description.

This invention relates to certain improvements upon the machine for which Letters Patent No. 461,892 were granted to me October 27, 1891, and these improvements relate to the construction of the kneaders and the guide for insuring their vibration.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a longitudinal sectional elevation; Fig. 2, a cross-sectional elevation; and Fig. 3, a partial longitudinal sectional elevation of a modification, showing the kneaders and kneader-frame tilted.

The trough *a* and its standards *b* may be as in the other machine referred to. The crank-shaft *c* may be provided with any suitable number of cranks, corresponding in number with the number of kneaders used. For convenience I have shown a four-crank shaft with two cranks and two kneaders in full, and these cranks may be disposed substantially as in the other machine. Each of the kneaders consists of a head *d*, preferably a casting, having a shank *e*, by which it may be secured to the crank-shaft, and arms *f*, to which the blades *g* are bolted, screwed, or otherwise fixed. There are, by preference, two flat blades *g* to each head, and these blades may be made with both sides straight or inclined; but I prefer to make them with one straight side and one inclined side, the straight side of one blade being opposite the inclined side of its mate, so that the inclined sides project beyond the straight sides, and thus increase the width of area over which the two travel, the inclined side of the blade of one kneader traveling partially behind the inclined side of the opposite blade of the next kneader and so increasing their efficiency. Instead of making the heads as castings I may substitute blocks of wood or other efficient supports for the blades, although I prefer castings for economical and sanitary reasons.

In order to vibrate the blades as they are moved up and down by the crank-shaft, I substitute for the guides of my former kneading-machine a frame *h*, made as a projection from the uprights *i*, which support the crank-shaft, and I rigidly affix this frame to the uprights below or at the pivot-bolts *j* of said uprights or make it in one with said uprights. These pivot-bolts are used to secure the uprights to the standards in such manner that the uprights may be tilted to raise the kneaders out of the trough or into and out of the dough-pan hereinafter referred to, and also so as to hold such uprights rigidly to the standards while kneading. To the cross-bar *h*² of the frame *h* are hinged or jointed rods *k*, which, by preference, extend over to the farther blade of each kneader to secure greater length and move in the arc of a larger circle, and these rods are jointed or hinged thereto; but the guide-rods may be connected to the kneaders at other points. Thus it will be seen that as the kneaders are raised and lowered by operation of the crank-shaft the guide-rods *k* cause them to vibrate, inasmuch as said guide-rods subserve the purpose of pivots or fulcrums for the kneaders. Instead of having the frame for the reception of the guide-rods, I may use posts *l*, as seen in Fig. 3, or a frame attached to the trough, and in this case the frame *h* may be extended and hinged to the posts at the same place with the guide-rods, and instead of the pivot-bolts on which the kneaders tilt a detachable connection—such as hooks *h*^x, as shown in said Fig. 3—may be made by which the kneaders may be thrown up out of the trough. The crank-shaft may be operated by gearing *m n* and a crank *o*, or otherwise, as desired.

I have shown in connection with my kneading-machine a bowl or pan *p*, having the lower corners of the ends rounded and provided with inside graduations of quantity *q*, to assist the operator in making up a batch of dough. This pan is made to fit in the trough *a* and the kneaders are worked in the pan when the flour is mixed in the liquid. A pan of this or other sort will be found a very convenient adjunct to my kneader.

The advantages of the improved form of blades is that two will do the work, substantially, of three of the old form and can be op-

erated in less space and more easily cleansed. The guide-rods are out of contact with the dough, and hence may be kept clean, and they avoid the friction upon the kneaders incident to kneaders passing through the guide of the former construction.

The construction of kneaders and guides herein set forth results in a machine much more cleanly in operation, more compact in construction, and much more readily cleansed than formerly, though in very large machines I may add a third blade to each kneader between the two blades herein described, similar to the arrangement of blades in the former machine, only that in this case the blades will be partially in alignment. I have used such kneader successfully.

What I claim is—

1. In a kneading-machine, a kneader having a head and blades secured thereto, the said blades being made with one straight side and one inclined side and the inclined side of one blade arranged opposite the straight side of the adjacent blade of the same kneader, substantially as described.

2. In a kneading-machine, a crank-shaft combined with a kneader having a head constructed with a shank by which it is connected with the crank-shaft and having arms branching from such shank and blades secured to such arms and having one straight side and one inclined side, the straight side of one blade being opposite the inclined side of its companion blade on the kneader, substantially as described.

3. In a kneading-machine, the combination

of a trough, a crank-shaft supported therein, kneaders secured to such shaft and adapted to receive vertical reciprocation therefrom, and guide-rods jointed to the kneaders and to a fixed portion of the machine, and thereby adapted to vibrate the kneaders as they are reciprocated, substantially as described.

4. In a kneading-machine, the combination of a trough, a crank-shaft supported therein, kneaders secured to such shaft and adapted to receive vertical reciprocation therefrom, tilting uprights in which the shaft is secured, a frame rigid with and projecting from said uprights, and guide-rods jointed to the kneaders and to the said frame to cause the kneaders to vibrate as they are reciprocated, substantially as described.

5. In a kneading-machine, the combination of a number of kneaders, each having a head and blades and each of the said blades being made with one straight side and one inclined or beveled side, the inclined side of one blade being arranged opposite the straight side of the adjacent blade of the same kneader and the inclined side of one kneader overlapping upon the path of travel of the inclined side of a blade of the next kneader, substantially as described.

In testimony whereof I have hereunto set my hand this 7th day of November, A. D. 1891.

JOHN MOSHEIM RUTHRAUFF.

Witnesses:

GEO. R. WOODRUFF,
J. E. FLEMMING.