(No Model.)

W. OMER.

MOTOR FOR CHURNS.

No. 471,886. Patented Mar. 29, 1892.

Fig. 1.

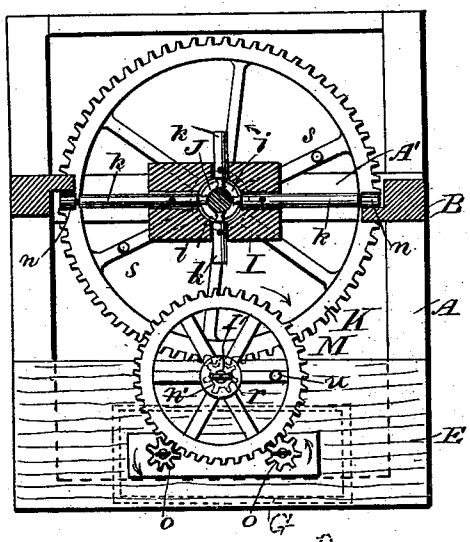


Fig. 2.

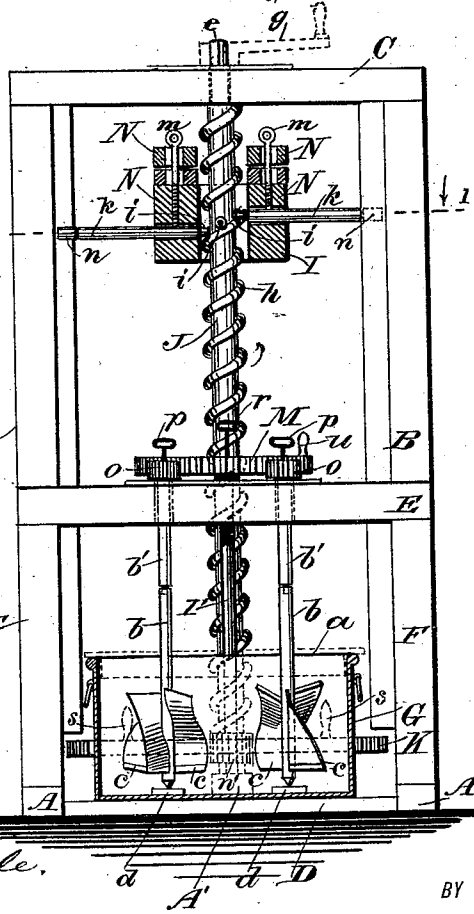


Fig. 3.

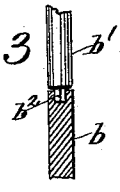
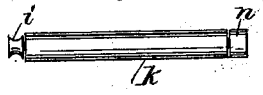


Fig. 4.



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MOTOR FOR CHURNS.

SPECIFICATION forming part of Letters Patent No. 471,886, dated March 29, 1892.

Application filed June 5, 1891. Serial No. 395,219. (No model.)

To all whom it may concern:

Be it known that I, WILSON OMER, of Cainsville, in the county of Harrison and State of Missouri, have invented a new and useful Motor for Churns, of which the following is a full, clear, and exact description.

The object of the invention is to provide a simple and effective motor for churns and other machines.

To these ends my invention consists in the construction and combination of parts as is hereinafter described and claimed.

Reference is to be made to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional plan view taken on the line 1 1 in Fig. 2. Fig. 2 is a side elevation, partly in section, of the motor. Fig. 3 is an enlarged detached view of one of the shafts that communicate motion to the churn-dashers, partly broken away and in section; and Fig. 4 is a detached perspective view of one of the arms which guide and sustain a descending weight that by its movement actuates the churn-dashers.

Upon the horizontal frame A, that is the base of the device, two upright standards B are oppositely erected, which are sustained in parallel planes by their connection below with the base A and at their upper ends with a transverse top piece C.

Toward one side of the rectangular base A, parallel with the planes defined by the vertical sides of the standards B, transversely considered, a lower frame is erected on said base, having a bottom plate D and a cap-plate E, supported by the upright pieces F, that are of an equal height and therefore sustain the cap-plate in a horizontal position, all being firmly secured together and made of wood or metal.

The motive power consists of a weight I, that by its descent actuates gearing in connection with the spindle-extensions b', the specific construction of which will now be described. A vertical shaft J is provided, which is rotatably supported at its lower end on a cross-piece A′ of the base A, that extends between the standards B thereon. The upper end of the shaft loosely engages the top cross-piece C and projects sufficiently to provide a shank e, that is preferably squared to receive a crank-lever g. (Shown by dotted lines in Fig. 2.) Upon the exterior of the shaft J a spirally-coiled wire rod h is placed and secured by any proper means, which serves as a track for the weight I, that is vertically and centrally apertured to slide upon the same. The connection between the weight named and the spiral track h is produced by the rotatable rollers i, which are loosely secured on the ends of the arms k. These last-mentioned pieces—preferably four in number—are removably secured in radial perforations in the weight I by the set-screws m, which project from its top face. The rollers i are grooved on their peripheries to rest upon the upper inclined face of the spiral track h, and the relative location of the arms they are mounted upon is such with regard to the pitch of this screw-thread that the rollers named will engage the track or thread at four equally-distant points, so that the weight I will be sustained and be adapted to slide downwardly without frictional contact other than that of the rollers on their support, which will be slight owing to the form of this supporting-track and free rotation of the rollers. Two of the arms k are made of sufficient length to permit their outer ends to approach near to the standards B, so that the cylindrical rollers n, which are loosely secured on these ends, so as to rotate freely, may be caused to bear against the rabbeted edges of the standards on opposite sides of the same when the device is in service. The remaining arms k are made shorter, the projecting portions furnishing means to insert and remove them. On the lower end portion of the shaft J a master-wheel K is placed and secured, which is of considerable diameter, its toothed periphery being in meshed engagement with a toothed pinion n', that is affixed upon the lower end portion of a counter-shaft I′. The counter-shaft named is vertically supported in a rotatable manner at its foot on the bottom plate D and near its upper end by a loose engagement with the cap-plate E, so that it will be revolved when the driving-shaft J is similarly moved. The upper end of the counter-shaft I′ projects above the cap-plate E, and is there provided with spur-wheel M, which I have shown in the present instance

as in mesh with two small pinions *o o*, each having a short spindle-section *b'*, squared at its lower end, as at b^2, to couple with the devices to be driven. In the drawings the sections *b'* couple with dasher-shafts *b*, having blades *c*, turning within a churn G, which is not claimed herein. Each of the spindle-sections *b'* has a handle *p* attached to its upper extremity, and there is a similar handle *r* secured to the top end of the counter-shaft I', these handles affording convenient grip-pieces to lift and remove the spindle-sections from the dasher or other shafts, the handle *r* enabling the operator to remove the spur-wheel M and pinion *n'* from toothed engagement with the master-wheel K and pinions *o* when this is desired, there being proper provision made to allow the counter-shaft to slide upwardly in its top and bottom supports. On the arms of the master-wheel K two or more handles *s* are upwardly projected, and a similar handle *u* is formed on or secured upon the upper face of the spur-wheel M. A proper number of removable weights N are provided to increase the ponderance of the weight I, and thus, by increasing its gravity, cause a quicker descent and more rapid rotation of the attached parts.

When the churn is to be used, it is placed in the position shown in Fig. 2 and the box G charged with cream properly prepared for churning. The counter-shaft I' is now rotated, so as to stir the cream thoroughly, and in order to elevate the weight I into position for service the counter-shaft is raised, so as to remove the pinion *n'* from its connection with the master-wheel K. The shaft J being now free to revolve is manipulated in a proper direction to elevate the weight I, which can be done by use of the handles *s* or the crank-lever *g*. When the weight I is permitted to descend, it will communicate a rotary motion to the driving-shaft J, which, through the gearing described, will rotate the spindles *b* and the screw-twisted dasher-blades *c*. The height of the standards and driving-shaft J should be so proportioned when the motor is constructed for operating a churn that the time of descent of the weight I will be of sufficient duration to effect the churning of the cream without the further aid of the operator, and it is claimed for this churning device that by its use the conversion of cream into butter and whey will be greatly expedited.

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

1. A motor comprising a frame having vertical stationary standards, a vertical rotary driving-shaft on the frame between the standards and having a spiral thread, a vertically-sliding weight on the said shaft to impart rotary motion thereto, engaging said standards and held from rotation thereby, a counter-shaft geared to said driving-shaft, and two spindle-sections geared to the counter-shaft and adapted at their lower ends to connect with the shafts to be driven and movable vertically to disconnect them from the counter-shaft, substantially as set forth.

2. The combination, in a churn-actuating mechanism, with a base-frame, two stationary standards thereon oppositely and vertically secured and connected by a top cross-piece, and a main driving-shaft rotatably supported in a vertical plane on the frame between the standards and having a spiral track on it extending from end to end, of a weight having an aperture through which the shaft is inserted, radial arms adjustably secured in the weight, having rollers loosely secured on their inner ends and engaging the spiral track on its top surface, two of the arms having rollers on their outer ends, which bear on the sides of the standards, and adjustable weights on the principal weight, substantially as described.

3. A motor comprising a frame having a vertical drive-shaft provided with a spiral thread, a vertically-sliding weight on the shaft for rotating it, a parallel counter-shaft geared to the drive-shaft and having a spur-wheel M, provided with the handle *r*, and the two transmitting-spindles having pinions *o*, provided with handles and meshing with wheel M, substantially as set forth.

4. The combination, with the vertical drive-shaft having a spiral track, a weight held from rotation and adapted to slide on the thread or track and rotate the shaft in descending and to be raised in turn by the rotation of the shaft in an opposite direction, of the transmitting or counter shaft separably geared to the lower end of drive-shaft, substantially as set forth.

5. In a churn-actuating mechanism, the combination, with a supporting-frame, an upright rotatable driving-shaft, a spiral track thereon, and gearing connected therewith, of an apertured weight having rollers supported to revolve in the aperture and rest on the track, and means for restraining the weight from rotation as it slides down the shaft and rotates the latter and the gearing connected therewith, substantially as described.

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Witnesses:
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