

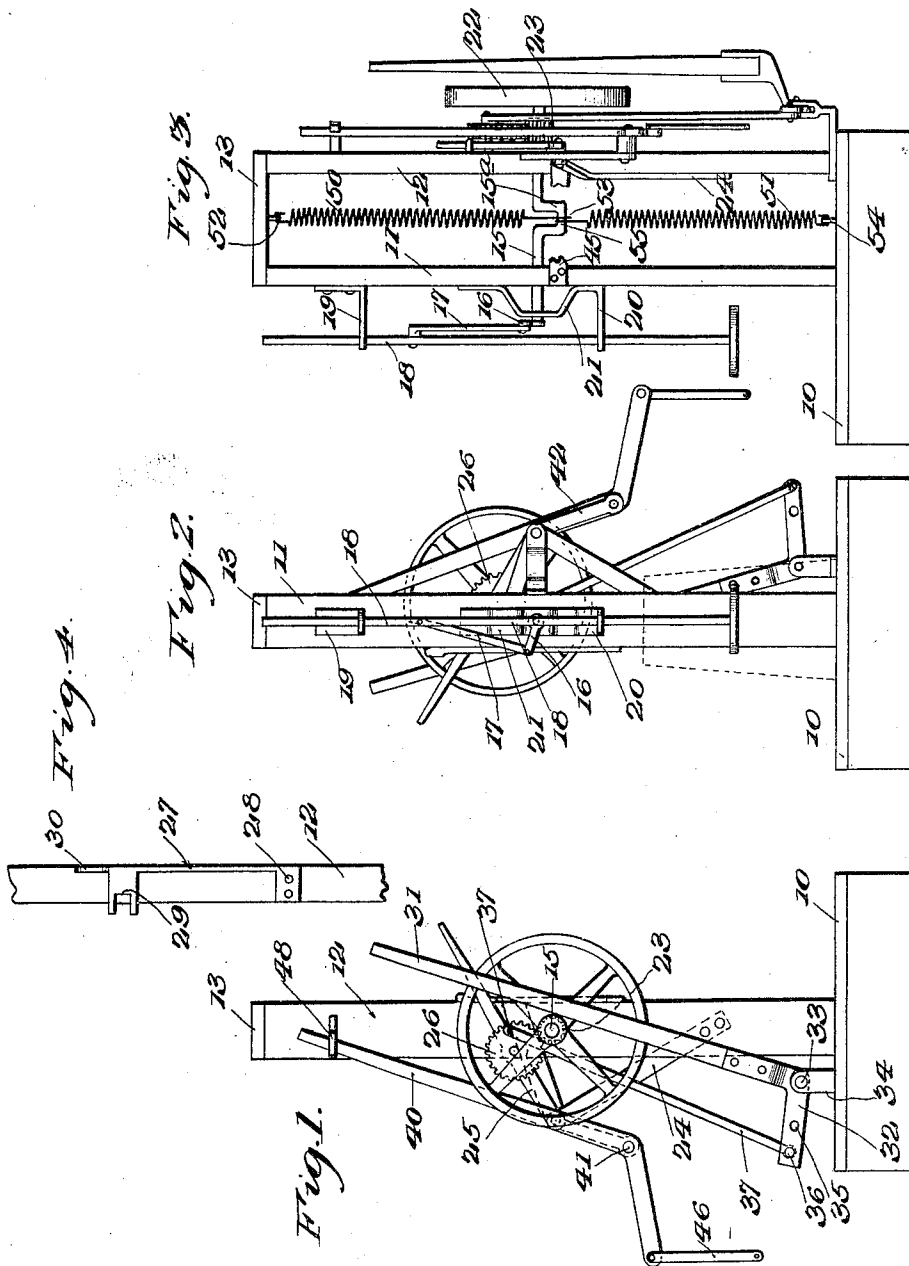
Dec. 25, 1923.

1,478,748

J. A. LAWRENCE

CHURN

Filed May 25, 1922



WITNESSES
R. G. Thomas

J. A. Lawrence

INVENTOR

BY *Sturges & Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOSEPH A. LAWRENCE, OF LINDSAY, OKLAHOMA.

CHURN.

Application filed May 25, 1922. Serial No. 563,592.

To all whom it may concern:

Be it known that I, JOSEPH A. LAWRENCE, a citizen of the United States, and a resident of Lindsay, in the county of Garvin and State of Oklahoma, have invented certain new and useful Improvements in Churns, of which the following is a specification.

This invention relates to an improvement in churns, and has for its object to provide a device of this character which is smooth and even running in operation and adapted to be manually operated from either a standing or sitting position or to be operated by motor and which is so organized that when one means is utilized for operating the same the other means will be disconnected from the mechanical train between the active operating means and the agitating means so as to decrease the load and enable the device to operate with maximum efficiency.

Another object is to provide a device of this character which is of simple and durable construction, reliable and efficient in operation and easy and comparatively inexpensive to manufacture.

Other objects and advantages of the invention reside in certain novel features of the construction, combination and arrangement of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming part of this specification, and in which:

Figure 1 is a view in side elevation, illustrating the preferred embodiment of the invention;

Figure 2 is a view in elevation of the side of the machine opposite to that shown in Figure 1;

Figure 3 is a view in front elevation; and

Figure 4 is a detail view in elevation of the spring catch or keeper for the swinging arm or gear carrier.

Referring to the drawings wherein for the sake of illustration is shown the preferred embodiment of the invention, the numeral 10 designates a base from which upstand standards, designated at 11 and 12, the standards being secured at their lower ends to the base and being connected at their upper ends by a cross piece 13. It is obvious that the standards 11 and 12 and cross piece 13 constitute a frame.

A shaft 15 is rotatably mounted in suitable bearings provided therefor in the standards 11 and 12, and one end of the shaft has a crank arm 16 fixed thereto and pivotally connected to one end of a pitman 17, the opposite end of which is pivotally connected to stirrer or agitating element 18 which may be of any suitable construction and which is mounted for reciprocatory movement in bearing brackets 19 and 20 fastened to the standard 11. The bearing bracket 20 is provided with an integral extension 21 formed to constitute a bearing for the adjacent end of the shaft 15, as shown in Figure 3. In this manner the motion of the shaft 15 is imparted to the stirrer 18 and serves to reciprocate the same.

The end of the shaft 15 opposite to the crank arm 16 extends for a substantial distance beyond the standard 12 and to this extreme end a fly wheel 22 is fixed. This fly wheel serves to give to the moving parts of the device a smooth even running and continuous motion and it is also adapted to serve as a driven gear wheel in that its periphery is adapted to engage a belt or friction driving pinion or other suitable means by which the motion of an electric motor or the like may be transmitted to the shaft 15. If the fly wheel 22 is used as a driven gear wheel and in conjunction with a motor as above described, the churn is power operated.

In order that the churn may be manually operated a pinion 23 is keyed to that portion of the shaft 15 which extends between the standard 12 and the fly wheel 22. A fixed arm 24 is secured to the standard 12 below the shaft 15 and inclined upwardly and outwardly and its upper end is pivotally connected to a swinging arm or gear carrier 25 which the fixed arm serves to support. A gear wheel 26 is rotatably mounted on the gear carrier or on swinging arm 25 and is adapted to be brought into engagement with the pinion 23. Means is provided for locking the gear carrier 25 in proper position when the gear 26 and the pinion 23 are in mesh or in driving engagement and preferably this means comprises a spring catch or keeper 27 secured, as at 28, to the standard 12 and having a notch 29 which receives the swinging arm or gear carrier 25 to hold it against vertical displacement. The gear carrier is maintained against lateral

displacement by virtue of its engagement with the standard 12 and its connection with the fixed arm 24. Preferably the spring catch or keeper 27 is constructed of resilient metal and if desired a finger piece or other operating means 30 may be integrally formed therewith in order to facilitate disengagement of the catch with the swinging arm or carrier 25 when desired. The gear wheel 26 may be actuated from a vertically extending operating lever 31 having a bell crank 32 pivotally connected, as at 33, to a pedestal 34 upstanding from the base 10. One arm of the bell crank lever 32 is provided with a series of openings 35 adapted to selectively coact with a pivot pin 36 whereby the bell crank lever is pivotally connected to one end of a connecting rod 37. It is obvious that by varying the connection of the connecting rod with the bell crank lever, the throw imparted by the bell crank lever to the connecting rod may be varied. The opposite end of the connecting rod 37 is pivotally connected to the gear 26 by means of a crank pin 27 eccentrically secured to the lateral face of the gear 26.

The series of openings 35 not only permit of varying the throw as described but they also serve to facilitate the actuation of the shaft 15 from an operating lever 40 which when in use is substantially horizontal and enables the operator to drive the machine from a sitting position. The lever 40 is pivotally supported, as at 41, to a bracket arm 42 secured to the standard 12 and to the fixed arm 24. A brace 45 may be employed to make the arms 24 and 42 more rigid, the brace being secured to these arms and to the standard 11. When the lever 40 is utilized to drive the churn one of its arms is connected with the bell crank 32 by means of a link 46, a pivot pin connecting the link 46 with one of the openings 35. When the lever 31 is utilized to drive the churn the lever 40 is disconnected from the bell crank lever 32 and is retained in inoperative position by a spring catch or keeper 48, as shown in Figure 1.

In order to render the machine highly efficient and smooth and even running, the shaft 15 is provided intermediate its ends and between the standards 11 and 12 with a crank 15^a. A pair of retractile coil springs, designated at 50 and 51 are provided, the retractile coil spring 50 having one end secured, as at 52, to the cross piece 13 and having its opposite end connected, as at 53 with the crank 15^a, and the retractile coil spring 50 having one of its ends secured, as at 54, to the base 10 and having its opposite end connected, as at 55, with the crank 15^a. These springs 50 and 51 are normally under tension and when the crank is turned, the tension of each spring is alternately increased and diminished. The springs serve to

stabilize the motion of the shaft and to prevent irregular and jumping motion.

In operation, the churn may be driven from a motor or may be manually operated from a standing position by utilizing the lever 31 or from a sitting position by utilizing the lever 40. The provision of the lever 40 enables a child or woman to operate the machine. Irrespective of what means is utilized to drive the churn maximum efficiency may always be had, since the mechanism not used to drive the shaft 15 is disconnected therefrom and does not serve to increase the load imposed upon the shaft or upon the mechanism. Of course when the manually operated means is used the fly wheel 22 serves as a fly wheel and when the motor is used this element serves not only as a fly wheel but also as a driven gear.

I claim:

1. In a churn, a rotatable shaft, an element actuated thereby, a fly wheel fixed to said shaft, a pinion keyed to said shaft, a driving gear selectively engageable with and disengageable from the pinion, and a plurality of levers adapted to be selectively utilized to actuate the driving gear wheel, the fly wheel being adapted to serve as a driven gear when the driving gear is disengaged from the pinion.

2. In a churn, a frame, a shaft rotatably mounted on said frame, a reciprocal element driven from said shaft, a pinion fixed to said shaft, a gear meshing with said pinion, a bell crank lever, means for pivotally supporting the bell crank lever, a vertically disposed rockable lever connected to one arm of the bell crank lever, the other arm of the bell crank lever having a plurality of openings therein, a connecting rod having one end pivotally connected to one of the openings of the arm of the bell crank lever and having its opposite end connected with the gear and a horizontally disposed rockable lever having a link whereby it may be connected with the bell crank lever so that the churn may be driven in a standing or sitting position.

3. In a churn, a frame, a shaft rotatably mounted on the frame and having its ends projecting laterally therefrom, a reciprocal element driven from one end of the shaft, a fly wheel fixed to the opposite end of the shaft, a pinion fixed to the shaft between the fly wheel and the frame, a fixed arm carried by the frame, a swinging arm pivotally connected at one end to the fixed arm, a gear rotatably mounted on the swinging arm intermediate its ends, a spring catch carried by the frame and adapted to engage the swinging arm adjacent its free end for holding it in position to maintain the gear in mesh with the pinion and manually operable means for actuating said gear.

JOSEPH A. LAWRENCE.