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C. G. WILSON.

BUTTER BLOCKING MACHINE.

APPLICATION FILED APR. 20, 1905.

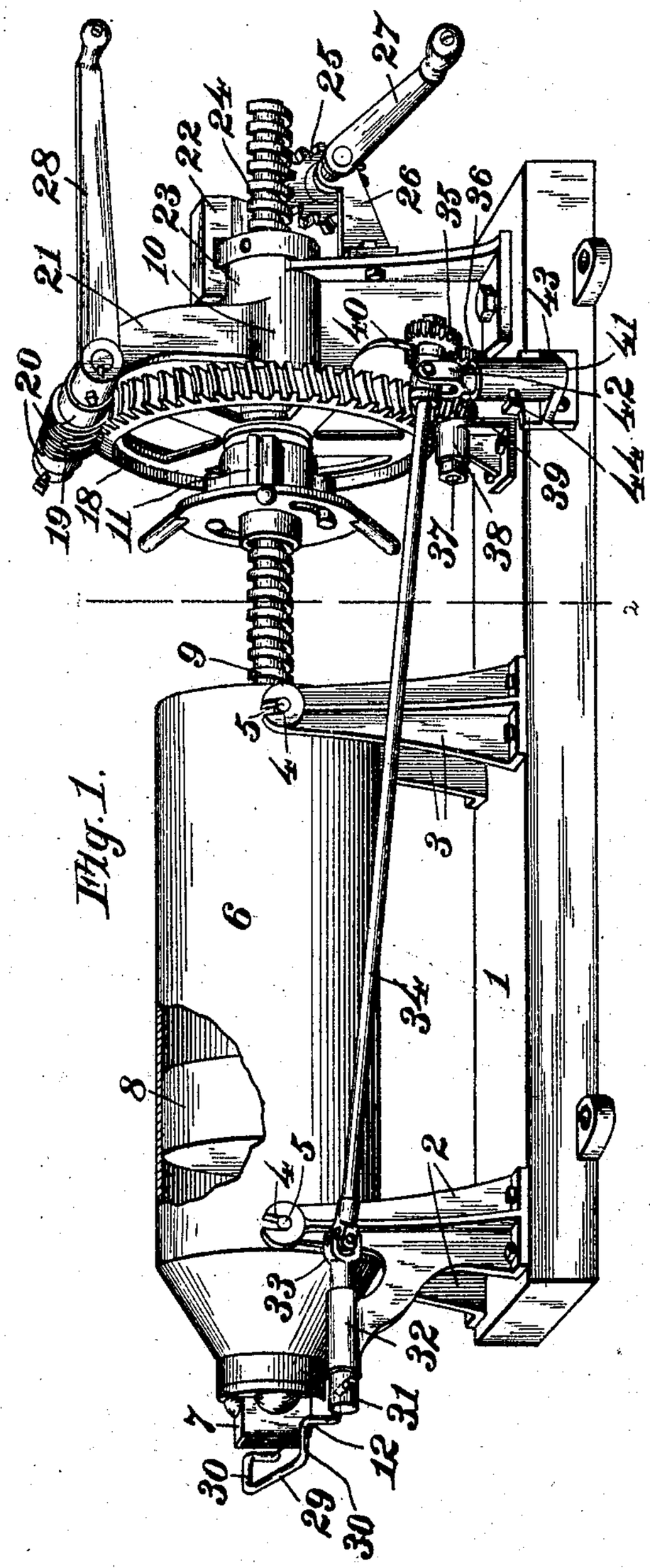

Fig. 1.

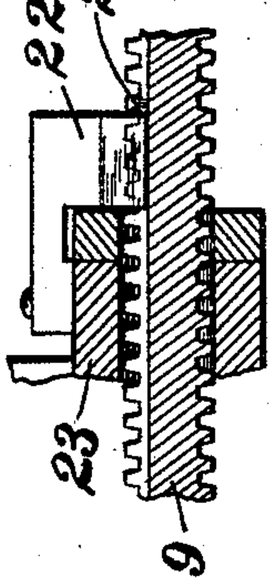

Fig. 3.

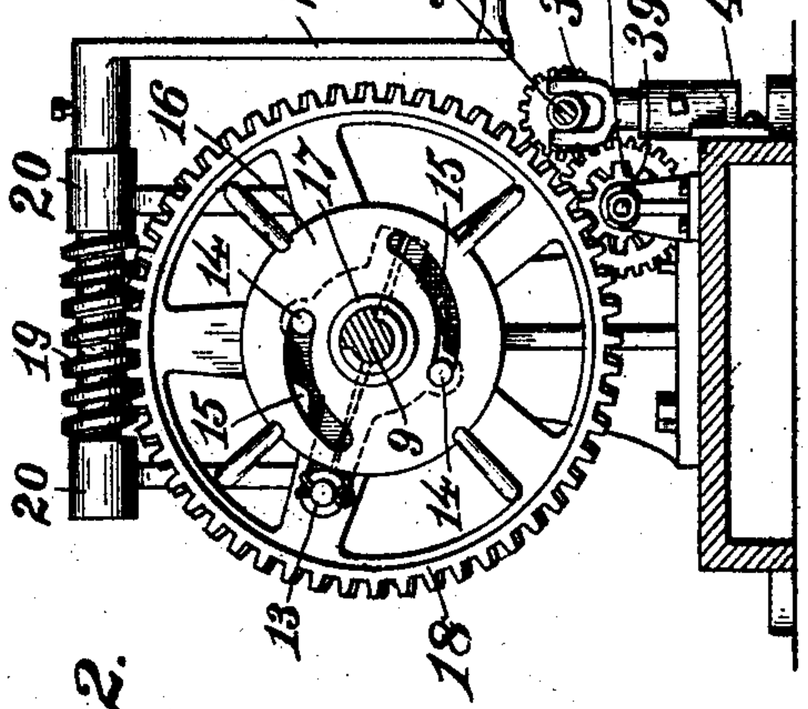

Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

CARLOS G. WILSON, OF ATLANTA, GEORGIA.

BUTTER-BLOCKING MACHINE.

No. 806,445. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed April 20, 1905. Serial No. 256,547.

To all whom it may concern:

Be it known that I, CARLOS G. WILSON, a citizen of the United States, residing in Atlanta, county of Fulton, and State of Georgia, have invented certain new and useful Improvements in Butter-Blocking Machines, of which the following is a specification.

My invention relates to a machine that may be run by hand for the purpose of blocking butter for individual use or may be made of larger proportions and adapted to be run by power for the purpose of blocking butter in suitable sizes to be sold at retail.

The object of my invention is to provide a simple, durable, and effective construction of machine that may be embodied in different sizes and which will accurately divide the butter into blocks of any desired weight.

My invention will be fully understood upon reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the complete machine. Fig. 2 is a section on the line 2 2, Fig. 1, looking toward the right. Fig. 3 is a detail view of the key for holding the screw against rotation, but permitting it to be moved axially by the feed-nut.

Projecting upward from a suitable base 1 are standards 2 3, of any suitable construction, having open bearings 4 at their upper ends to receive the studs 5 of the barrel 6. Said barrel being thus removably mounted in the standards may be conveniently charged with butter and replaced in the standards. Detachably secured to its forward end is the discharge-nozzle 7. This nozzle is shown with a square section; but it may obviously be of any other shape which it is desired to impart to the butter. Butter placed in the barrel 6 is expressed through the nozzle 7 by a plunger 8, under control of a feed-screw 9, which has sliding bearing in a standard 10 and is fed forward by a nut 11. As the butter issues from the nozzle 7 it is severed in blocks or cakes by a cutter 12, which passes the mouth of the nozzle at periods bearing a relation to the flow of butter proportional to the size of the cakes desired.

To provide a simple and efficient means for feeding the screw and at the same time to permit the screw to be run back rapidly for withdrawing the plunger 8 when it is desired to remove barrel 6, (either for recharging or for placing it with its contained butter in a refrigerator,) the nut 11 is divided diametrically and its parts connected by a hinge 13, Fig. 2, while pins 14, projecting from the respective halves of the nut, enter cam-slots 15 in an opening and closing disk 16, which has a rotary bearing 17 on the screw 9.

When the disk 16 is rotated to the left in Fig. 2, the halves of the nut are closed around the screw 9, so that the internal threads in the nut mesh with the external threads of the screw, and rotation of the nut will thereafter feed the screw. If, however, the disk 16 is rotated to the right in Fig. 2, its cam-groove 16 will separate the pins 14 and open the nut, so that the screw is then free to move axially independently of the nut. To impart rotation to the nut and at the same time to support it without providing additional bearings, a worm-wheel 18 is mounted on the screw 9 through a plain turning bearing, and the halves of the nut are secured to one of the spokes of the wheel by means of the pintle of the hinge 13, as shown in Fig. 2. Wheel 18 abuts against the standard 10, so as to feed the screw in the direction to express the butter from the barrel. Worm-wheel 18 is rotated by the worm 19, having bearings 20 in the upwardly-extending arm 21 on the standard 10. A key 22, secured to the bearing-boss 23 of the standard 10, enters a slot 24 of the screw 9 and prevents said screw from turning with its nut, while permitting it to move freely in an axial direction under the influence of said nut. When the nut is supported as already described, the screw may be run back rapidly by a pinion 25, meshing with the thread of screw 9 and journaled in the bracket 26 on standard 10, said pinion being rotated in any suitable manner, as by a crank 27. Worm 19 is shown equipped with a crank 28 for rotating it; but in machines constructed of sufficient capacity to produce pound and half-pound blocks of butter this crank-arm would preferably be replaced by a band-wheel that could be driven from suitable source of power. Crank 27 could likewise be replaced by means for driving the pinion 25 from the same source of power, fast and loose pulleys being employed, so as to arrest the rotation of the running-back pinion at will.

To avoid mutilating the blocks of butter severed by the cutter 12, the frame 29 for said cutter is bent forwardly, as shown at 30, a distance equal at least to the thickness of the block to be cut, and to revolve the cutter past the mouth of the discharge-nozzle the cutter is made to project at right angles from

a short shaft 31, mounted in a bearing 32, which may be conveniently carried by a standard 2, and said shaft is connected by a gimbal-joint 33, with a downwardly-inclined shaft 34, which carries a specially-toothed pinion 35 at its lower rear end, that meshes with a larger pinion 36 on shaft 37, journaled in bearing 38. Said shaft 37 also carries a spirally-toothed pinion 39, that meshes with and is driven by the worm-wheel 18. Shaft 34 is supported in a bearing 40, trunnioned at 41 in a bifurcated post 42, fitted in a socket 43, and held at any suitable height in said socket by a set-screw 44. Pinion 35 is removable and replaceable by other pinions of different diameters, and the vertical adjustment of the supporting-post 42 provides for bringing into mesh with the multiplying-pinion 36 any pinion 35 that may be placed upon the shaft 34. By this interchange of pinions the cutting period of cutter 12 may be varied at will relatively to the rate at which butter is expressed from the nozzle 7 and the size of the blocks cut off thus regulated at will.

Butter having a high coefficient of pressibility must be fed constantly if it is desired to have the severed blocks uniform in size and weight. It must also be expressed with considerable rapidity. By my improved construction of machine I am enabled to express the butter with ample rapidity and to maintain such accuracy in the relation of the cutting period to the rate of issue of the butter from the nozzle as to insure substantial uniformity in the weight and size of the blocks, and this enables me to utilize my machine for preparing butter for the market, where it is necessary that the blocks accurately correspond to a definite weight.

The open bearing 4 of the front and rear standards 2 3 are each constructed on an arc concentric with the stud that enters the other bearing, so that longitudinal thrust or pull upon the barrel 6 in either direction will have no tendency to displace the barrel from its seats, but either end may yield slightly to avoid transverse strain upon the feed-screw if there is any inaccuracy in centering the barrel with the screw, and when it is desired to remove the barrel after the plunger 8 is withdrawn the barrel may be swung on either pair of pins as a center until the other pair are out of their bearings, after which the barrel may be entirely lifted from the machine. The importance of having the barrel readily movable and replaceable will be appreciated when it is remembered that for producing small blocks for hotel or household use it may frequently be desired to remove the barrel with a large proportion of its contained butter and place it bodily in a refrigerator to preserve the butter until it is desired to separate more of it into blocks for individul use, and when the machine is used on a larger scale for making blocks for the market it may be desirable to have a number of barrels 6 for a given machine, one being filled and packed while another is in the machine having the butter expressed from it.

I do not limit myself to the precise details of construction herein shown and described, but desire it to be understood that various modifications might be made without departing from the scope of my present invention. While I prefer the worm-gear for driving the nut in a large machine where the speed of rotation of the worm can be regulated at will, I reserve the right to employ a gear-wheel for rotating the wheel 18 instead of the worm 19, it being obvious that this could be readily arranged by merely rotating the shaft 20 ninety degrees and bringing it parallel with the screw upon which the wheel 18 turns. This would be desirable in those cases where the capacity of the barrel 6 would admit of expressing the butter more rapidly from the nozzle 7. To take advantage of this increase in the feed of the butter, the cutter 12 could be duplicated so that two cutting strokes would be secured instead of one.

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

1. In combination with a butter-blocking machine in which the butter is expressed from the barrel, a cutter having a cutting stroke past the discharge end of the barrel, a cutter-shaft mounted substantially parallel to the axis of the barrel, a transmitting-shaft connected to the cutter-shaft by a flexible joint and a reduction-gear connected with the rear end of the transmitting-shaft; said rear end of the transmitting-shaft having a vertically-adjustable support whereby the shaft may swing on its flexibly-jointed end, transversely to its axis, and one of the elements of the reduction-gear being interchangeable to determine the speed of rotation transmitted through said shaft.

2. In combination with a butter-blocking machine having a plunger for expressing butter therefrom, a cutter having a cutting stroke past the end of the discharge end of the machine, a driving mechanism for the plunger, means for operating the cutter from said driving mechanism, consisting of the reduction-gear receiving motion from said driving mechanism, a transmitting-shaft carrying one element of said reduction-gear and having a flexible connection with the cutter whereby it may swing laterally to permit the use of different-sized gears in the reduction-gear, and a support for said transmitting-shaft comprising a sleeve in which the shaft rotates, a bifurcated post in which said sleeve is trunnioned and a socket in which said post is fitted and in which it is adjustable in a direction to swing the transmitting-shaft on its flexible joint.

3. In a butter-blocking machine, the com-

bination of the barrel, the plunger, the feed-screw, a standard in which the feed-screw has a non-rotating but sliding bearing, a nut surrounding and meshing with the feed-screw, a worm-wheel rotatable upon the screw, abutting the standard, and connected to the nut by means which prevents relative rotation between said nut and wheel, and a worm driving said worm-wheel.

4. In a butter-blocking machine, the combination of the barrel, the plunger for expressing butter therefrom, the feed-screw for said plunger, the split nut for projecting the screw, having means for clamping and releasing it, the gear driving said nut, the standard which sustains the thrust of the nut, and in which the screw has non-rotating but longitudinally-sliding bearing, and the pinion meshing with the thread of the screw, and having means for driving it to impart axial movement to the screw at will.

5. In a butter-blocking machine, the combination of the barrel, the plunger, the screw, the nut for advancing the screw, the gear for rotating the nut, the cutter moving past the discharge end of the barrel, the cutter-shaft, the transmitting-shaft for rotating the cutter-shaft, connected therewith through a universal joint, the multiplying-gear through which the transmitting-shaft is driven interchangeable to regulate the speed of the cutter, and means through which said multiplying-gear is driven from the gear which rotates the nut.

The foregoing specification signed at Washington, District of Columbia, this 7th day of April, 1905.

CARLOS G. WILSON.

In presence of—
HERVEY S. KNIGHT,
EDWIN S. CLARKSON.