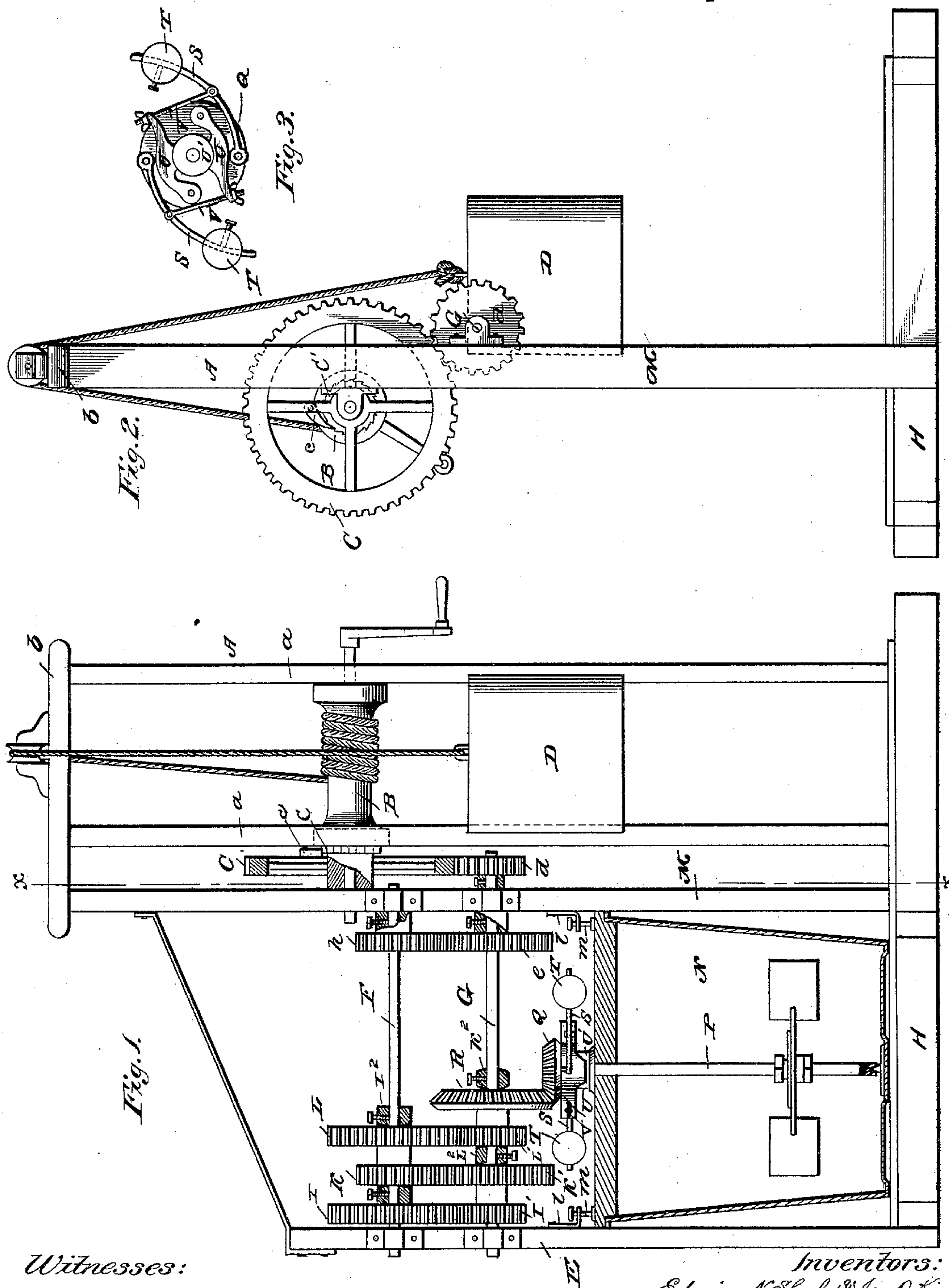


(No Model.)

E. N. SHAFER & J. D. KING.
MOTOR FOR OPERATING CHURNS.

No. 401,861.

Patented Apr. 23, 1889.



Witnesses:

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UNITED STATES PATENT OFFICE.

EDWIN NEWTON SHAFER AND JOHN DILLOND KING, OF KIOWA, KANSAS.

MOTOR FOR OPERATING CHURNS.

SPECIFICATION forming part of Letters Patent No. 401,861, dated April 23, 1889.

Application filed November 19, 1888. Serial No. 291,201. (No model.)

To all whom it may concern:

Be it known that we, EDWIN NEWTON SHAFER and JOHN DILLOND KING, citizens of the United States, residing at Kiowa, in the county of Barbour and State of Kansas, have invented certain new and useful Improvements in Motors for Operating Churns; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in motors for operating churns, and the novelty will be fully understood from the following description and claims, when taken in connection with the annexed drawings, in which—

Figure 1 is a front view of a machine embodying our improvements. Fig. 2 is a vertical sectional view of the same; and Fig. 3 is an inverted plan view of the dasher-shaft gear or pinion, showing the governor or regulating device in position.

Referring by letter to the said drawings, A indicates a vertical frame, which is substantially braced and sufficiently high to receive the operating mechanism and properly support the same. This frame A is preferably composed of two uprights, *a*, within which is journaled the shaft of a drum, B, provided at one end with a suitable crank for turning the same and at the opposite end with a gear-wheel, C, for imparting motion to another gear, which will be presently explained. The end of the drum-shaft carrying the gear is also provided with a fixed ratchet, C', and a pawl, *c*, is pivoted in a convenient position to engage the said ratchet and prevent the said drum-shaft from backward movement. The said uprights are connected by a cross-bar at their upper ends, as shown at *b*, and on this cross-bar is journaled a pulley, over which passes a rope, one end of which is secured to the winding-drum and the opposite end to a weight, D, provided with side grooves, (shown in dotted lines,) to travel on the uprights *a*.

While we have shown and described the pulley for the weighted cord as being journaled on the cross-bar of the uprights, yet it is obvious that such pulley may be journaled to

the ceiling of a room or to any other convenient object.

E indicates an upright, which is arranged to one side of one of the uprights *a*, and M another upright adjacent to the uprights *a*, and which together form a bearing for the ends of two horizontal shafts, F and G.

On one end of the lower horizontal shaft, G, is fixed a small gear or pinion, *d*, which meshes with the large gear C on the drum-shaft and takes motion therefrom. This shaft G has fixed to it, adjacent to the gear *d*, a larger gear, *e*, which meshes with a gear, *h*, fixed on the shaft, F, above. The shaft F carries a fixed gear, I, and a combined pinion and gear-wheel, K L, respectively, loosely mounted on the said shaft and held in place by an adjustable collar, I'. The shaft G has loosely mounted on it a combined pinion and gear-wheel, I' K', and a combined pinion and bevel-gear, L' R, the two sets of gear being separated by a collar, L', and held in place by a collar, K'. Motion is transmitted from the wheel C to the pinion *d* and shaft G. The gear *e* on the shaft G meshes with the pinion *h*, and thereby gives motion to the shaft F. The gear I on the shaft F meshes with the pinion I', and the gear K' meshes with the pinion K. The gear L, which moves with the pinion K, meshes with the pinion L', which in turn moves with the bevel-gear R. Thus it will be seen that the speed is constantly increased from the drum B to the gear R.

The main frame is provided with a suitable base, H, and on this base, between the uprights E and one of the uprights *a*, or the upright M, is secured the churn body or tub N.

l indicates small angle-irons secured, respectively, to the adjacent sides of the uprights E and M at a point above the churn-body, and are designed to receive set-screws or bolts *m*, whereby the cover of the churn may be secured in position.

P indicates the churn dasher-shaft, which has a bearing at its lower end in the bottom of the tub or body, and its upper end passing through an aperture in the cover thereof, and is provided with a gear carrying a governing device. This beveled gear or pinion Q, which is secured to the upper end of the

dasher-shaft, meshes and receives motion from the beveled gear R, secured to the horizontal shaft G. Fixed on the churn-cover and surrounding the shaft P is a collar or sleeve, U',
5 above which is the pinion Q.

S indicates two levers pivoted to the under side of the small beveled gear which moves with the dasher-shaft. The outer ends of these levers are adjustably provided with weights
10 T, which may be moved to or from the pivotal point and secured by means of a set-screw or the like.

U indicates clamping-shoes, which are also pivoted at one end to the under side of the
15 gear, as better shown in Fig. 3 of the drawings, and their opposite ends are connected with the governor-arms S by means of rods V. These rods are threaded at one end and provided with a wing-nut, whereby the dis-
20 tance from the respective governor-arms and the free ends of the clamping-shoes may be increased or lessened. These clamping-shoes are designed to engage by frictional contact the sleeve on the churn-cover.

25 It will thus be seen that as the clamping-shoes are drawn against the sleeve the said shaft and operating mechanism will be retarded in its movement. It will also be seen that the clamping-shoes may be so adjusted
30 as to regulate the degree of clamping action, and hence the speed or rotary motion of the dasher. When the weight descends, the dasher will be given a rotary motion through the medium of the intermediate gearing; but
35 should the weight descend too rapidly, so as to threaten injury to any of the parts, the centrifugal action or force will cause the weights or balls on the levers S to move out-

wardly, while, through the medium of the connecting-rod, the brake-shoes will be drawn 40 against the sleeve with a force in accordance to the speed at which the machine is run, and thereby govern the fall of the weight and the consequent motion of the dasher.

The dasher-shaft may be provided with 45 blades of any known or approved construction.

Having described our invention, what we claim is—

1. In a churn-operating mechanism, the combination of an upright frame, a weight 50 arranged to travel thereon, a drum journaled therein, a rope connecting the weight with the drum, gearing for rotating a dasher-shaft, and a governor arranged upon the said shaft, whereby both the movements of the shaft and 55 the falling of the weight may be controlled, substantially as specified.

2. In a churn-operating mechanism, the combination of a vertical rotative shaft having a beveled gear at its upper end for rotating the 60 same, a governing device arranged upon the under side of the gear and consisting of two pivoted brake-shoes, two pivoted weighted arms or levers, and rods adjustably connecting one end of each of the respective shoes 65 with the respective weighted arms, whereby said shoes are adapted to bear upon a stationary collar to regulate the speed of the gearing, substantially as specified.

In testimony whereof we affix our signa- 70 tures in presence of two witnesses.

EDWIN NEWTON SHAFER.

JOHN DILLOND KING.

Witnesses:

E. N. EDWARDS,

R. D. HEROLD.