(No Model.) 3 Sheets—Sheet 1.

C. OWENS.

COMBINED CHURN AND BUTTER WORKER.

No. 550,687. Patented Dec. 3, 1895.

Fig. 1.

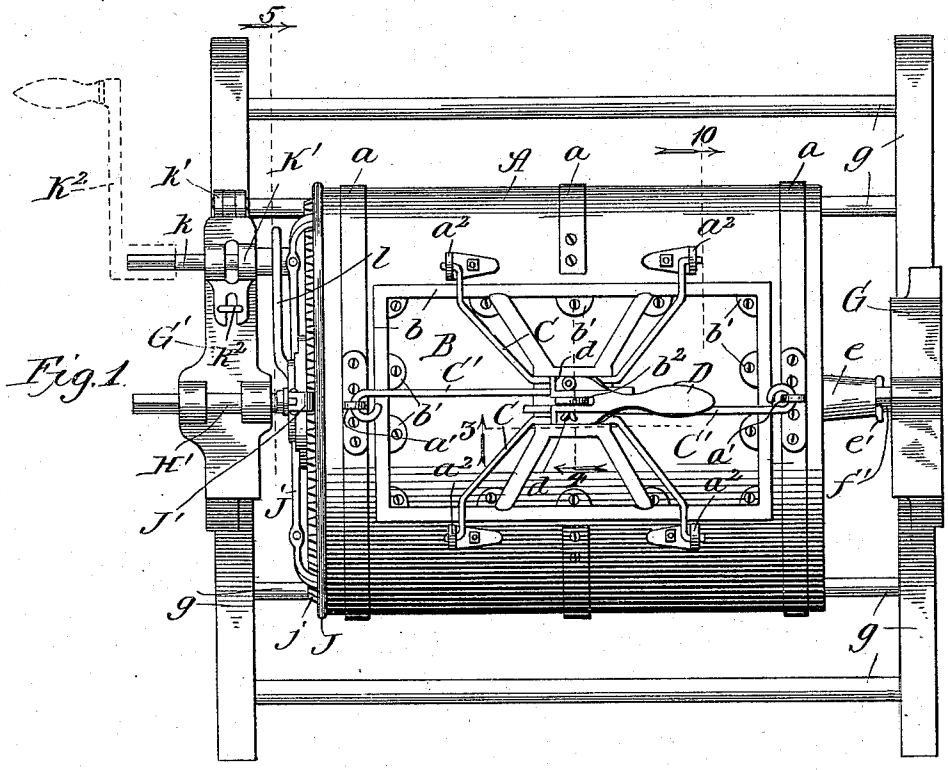


Fig. 2.

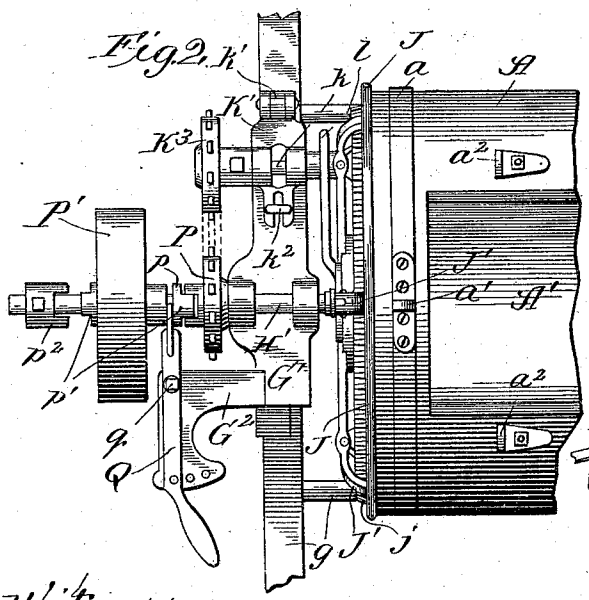


Fig. 3.

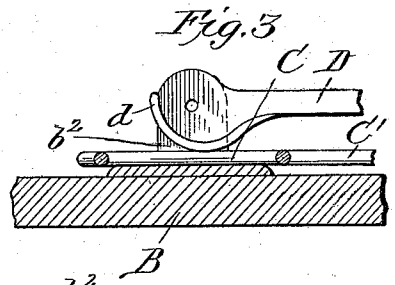
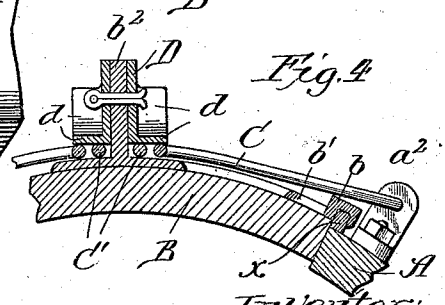


Fig. 4.



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(No Model.)

3 Sheets—Sheet 2.

C. OWENS.

COMBINED CHchurn AND BUTTER WORKER.

No. 550,687. Patented Dec. 3, 1895.

Fig. 5.

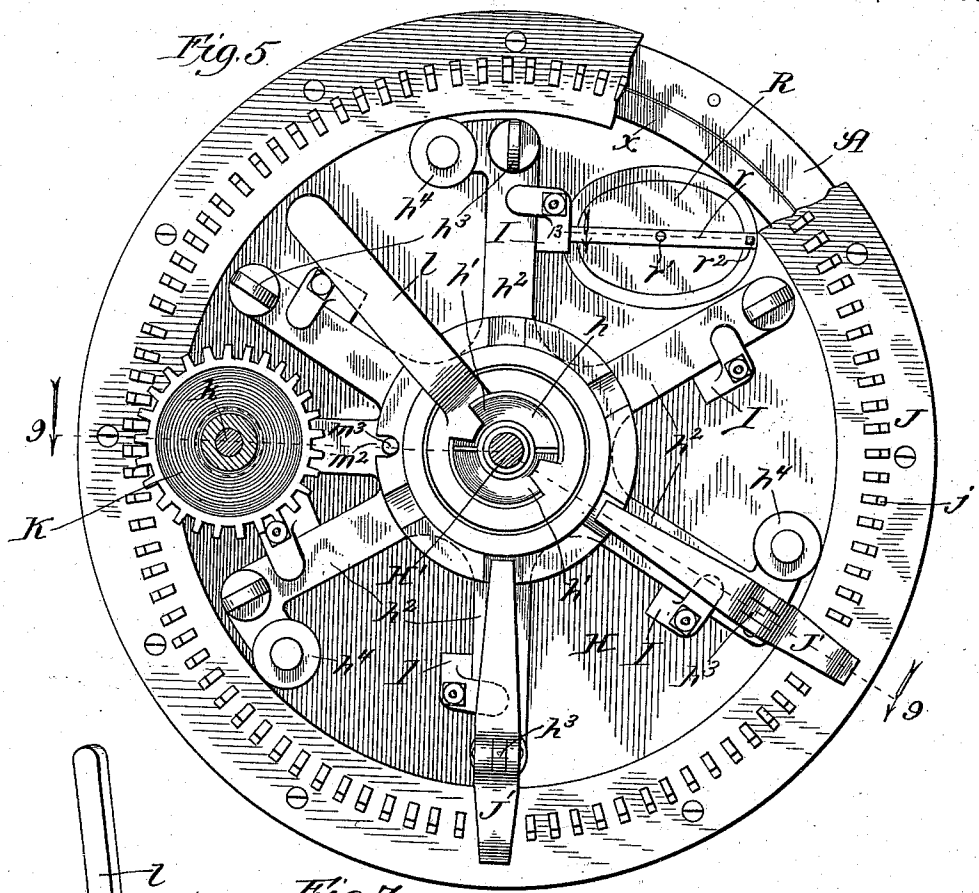


Fig. 6.

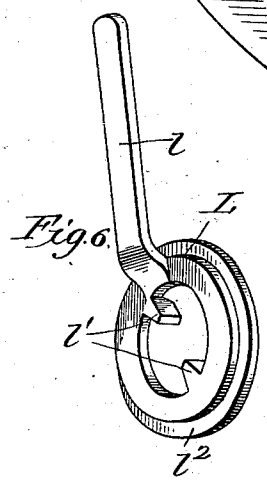


Fig. 7.

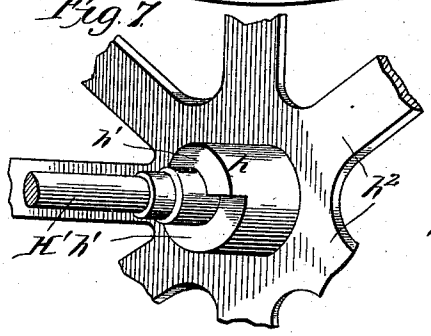


Fig. 8.

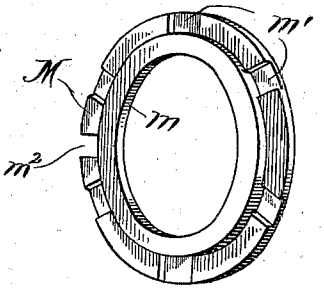
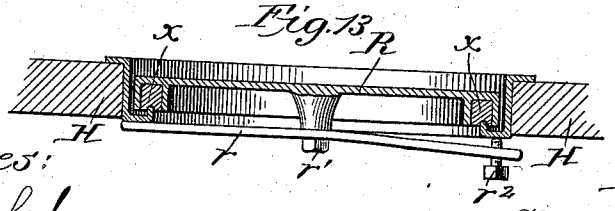


Fig. 13.



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(No Model.) 3 Sheets—Sheet 3.

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COMBINED Cchurn AND BUTTER WORKER.

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Fig. 9.

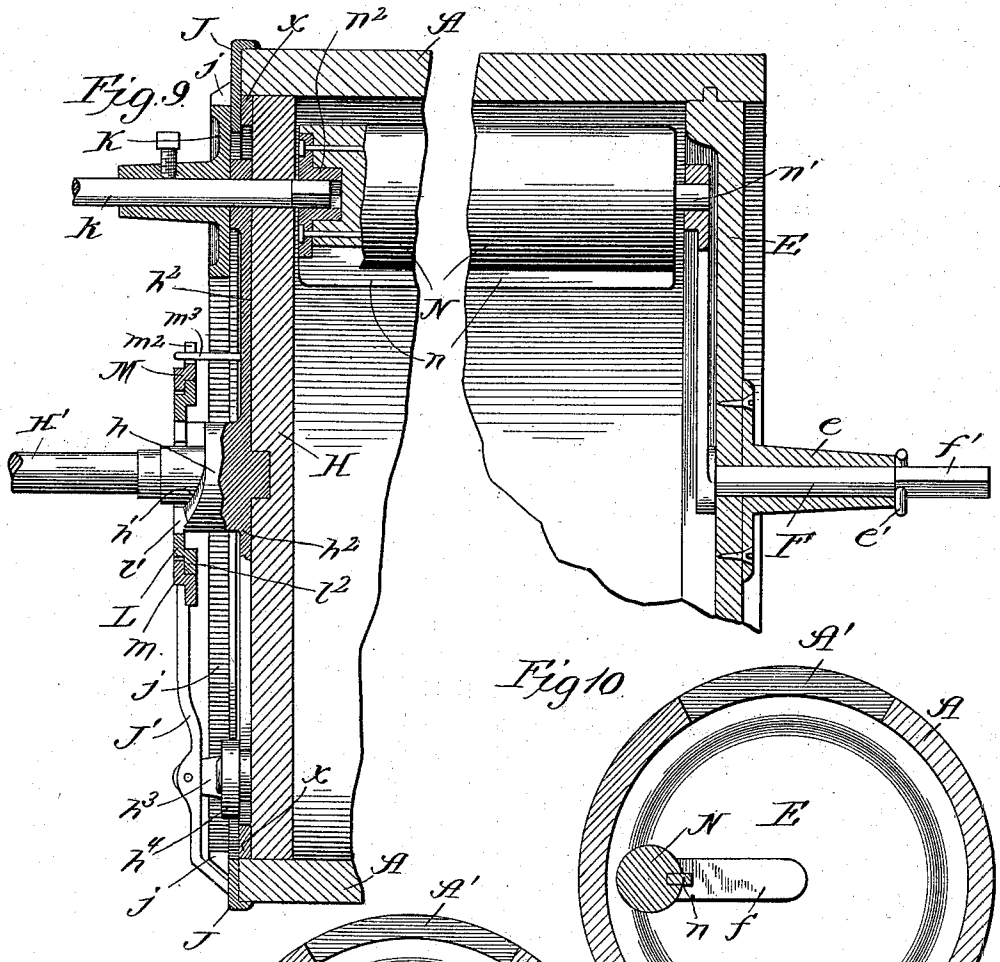


Fig 10.

Fig 11.

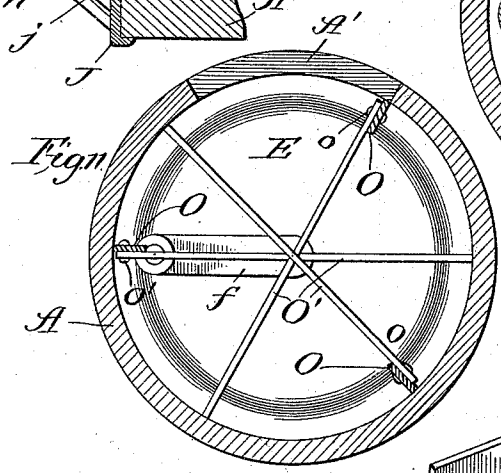
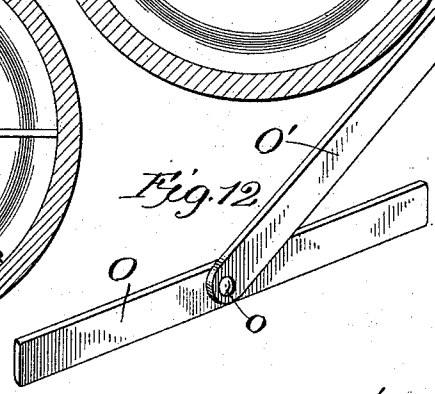


Fig. 12.



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UNITED STATES PATENT OFFICE.

CHARLES OWENS, OF WARREN COUNTY, ILLINOIS.

COMBINED CHURN AND BUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 550,687, dated December 3, 1895.

Application filed November 30, 1894. Serial No. 530,470. (No model.)

To all whom it may concern:

Be it known that I, CHARLES OWENS, a citizen of the United States, residing in the county of Warren, State of Illinois, have invented certain new and useful Improvements in Butter-Workers and Butter-Workers in Combination with Churns, of which the following is a specification, which will enable others skilled in the art to which it belongs to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention has reference to butter-workers and the same in combination with churns; and its object is to provide an improved head for a cylindrical vessel fixed stationary while the body of the vessel revolves around it in butter-working, and in the combined churn and butter-worker, adapted to be tightly clamped to the vessel and revolve with it in churning.

The invention consists, further, in the construction and combination hereinafter described, and particularly pointed out in the claims.

This my invention I embody in the novel features of construction and arrangement shown in the following-described mechanism, and the object of the invention is attained thereby.

In the annexed drawings, Figure 1 is a plan view of my improved combined butter-worker and churn. Fig. 2 is a plan of a portion of same, showing a power attachment. Figs. 3 and 4 are enlarged sectional views taken on lines 3 and 4, respectively, of Fig. 1. Fig. 5 is an enlarged end elevation taken on line 5 of Fig. 1. Figs. 6, 7, and 8 are perspective views of details entering into the construction of clamp hereinafter more fully described. Fig. 9 is a broken plan sectional view taken on line 9 of Fig. 5. Fig. 10 is a cross-section taken on line 10 of Fig. 1, illustrating machine as used in butter-working. Fig. 11 is a cross-section similar to that shown in Fig. 10, illustrating machine as adapted to churning. Fig. 12 is a perspective view of one of the parts shown in Fig. 11; Fig. 13, a sectional view on line 13 of Fig. 5.

The cylindrical vessel A has bands or hoops a and an opening A′ in its side for putting in cream, taking out butter, &c., which is closed by a suitable lid B, preferably of the kind shown in the drawings. This lid B is strengthened by a metal frame b, secured to the lid by screws passing through the ears b'. The clips a', mounted on the hoops a, and the clips a^2, fastened to the vessel A, have pivoted in them the levers C′ and C, respectively. The clamp handle or lever D, having cam-flanges d, which press upon the levers C and C′, thus keeping the lid tightly closed, is pivoted on an outwardly-extending ear b^2, which is a part of the frame b. The head E at one end of the cylinder A has the hub or sleeve e, on which it revolves with the rest of the vessel A about the trunnion F, supporting that end of the cylinder A. The trunnion F carries rigidly an arm f on the inside of the cylinder, extending outwardly from the trunnion. The trunnion F is supported by the bracket G. The other head H of the cylinder is separate therefrom, so that it may revolve with the cylinder A in churning and yet remain stationary while the rest of the vessel revolves around it in butter-working.

H′ is a trunnion projecting from the head H and provided with radially-extending arms h^2, bearing against the head, which arms h^2 are provided with ears h^3, to which are pivoted clamping-levers J′, only two of which clamping-levers are shown in Fig. 5. The arms h^2 are held tightly against the head H by the lugs or clamps I on the head, but so that the arms h^2 may be released from the clamps by turning the head to the right or the arms to the left in the construction shown in Fig. 5, so that the head may be taken out for cleansing, &c.

The trunnion H′ may be rotated by a crank attached to its squared end, as shown in Fig. 1, or by the power attachment shown in Fig. 2. The arms h^2 carry the roller or friction-wheels h^4, on which travels the inner surface of the flanged ring J in the process of butter-working. The trunnion H′ has a hub portion h, which has a cam-surface h' on its end face. The ring L, fitting around the hub portion h of the trunnion H′, has a handle l and lugs l' impinging on the cam-surface h', and also has an annular flange l^2 engaging the flange m of the ring M. The ring M, which fits outside the ring L, has notches m, into which the in-

ner ends of the clamp-levers J′ enter, and the ring M has a notch m^2, which is engaged by the pin m^3, mounted on one of the radial arms h^2, as more particularly shown in Fig. 9.

The head H has, preferably, a suitable opening closed by a lid or cover R, which may be removed when the machine is used as a butter-worker, so as to observe the process. This lid is held tightly in position in the process of churning, being pressed outwardly against the inside of the head H by means of the set-screw r^2, operating on the lever r, pivoted to the lid at r'.

The roll N used in butter-working has, preferably, one or more longitudinal flanges or projections n. This roll has a trunnion n' on one end turning in the bearing in the arm f and a socket-plate n^2, fitted into the other end of the roll adapted to engage the square end of the trunnion or shaft k.

The flanged ring J is provided with teeth j, into which mesh the teeth of cog-wheel K, carried by the shaft k, which turns in a journal-bearing formed on the bracket G′, with the lid or hasp K′ pivoted at one end k' and held in place at the other end by the button k^2. The shaft k is rotated by the crank K^2, as shown in Fig. 1, or by a chain and sprocket-wheels K^3 and P, as shown in Fig. 2. The sprocket-wheel P is loosely mounted on the trunnion or shaft H′ and is carried with the loose pulley P′ when thrown into gear with it by means of the clutch p and p', operated by the hand-lever Q, pivoted at q on the bracket G^2. The pulley P′ may also be thrown into gear, so as to carry with it the trunnion or shaft H′ by means of the clutch p' and p^2.

The strips O used as dashers in churning are held in position against the side of the vessel by means of the strips O′, which are pivoted to the strips O at o, being turned at right angles with the axis of the vessel, thus pressing against the opposite side of the vessel.

x is a suitable packing, preferably of cork, between the lid B and the vessel A and between the head H and the vessel A.

g are legs of supporting-frame to which are attached the brackets G and G′.

This machine is used as a churn in the following manner: The shaft k with its cog-wheel, &c., is drawn out and removed and the roll N is taken out of the vessel. The orifice in the head H, in which the shaft k turns, is closed with a cork or other suitable stopper. The handle l is then turned so as to clamp the head H tightly to the vessel. The dashers O are placed in position inside the vessel, and the cream being put in and the lid B closed the vessel is rotated by the shaft or trunnion H, which is horizontal, or nearly so.

The machine is transformed into a butter-worker in the following manner: The handle l is thrown back, so that the vessel A may revolve around the head H while it remains stationary. The dashers O are removed from the vessel. The roll N is placed in position inside the vessel and the shaft k is placed in position with its squared end inserted into the socket-plate n^2. The roll N being then rotated by its shaft k the vessel A is also rotated thereby in the same direction, the head H remaining stationary.

It is evident that there may be more than one roller and that the roll may be of various shapes and forms. Of course I do not confine myself to the mechanism above given any more than is pointed out in the claims.

I do not in this application claim, broadly, the head H of the vessel A, adapted to be tightly clamped to the vessel A, so as to revolve with it and also adapted to be fixed stationary, so that the rest of the vessel may revolve about it when desired, which invention is already patented to me in the United States; but what I do claim are the improvements in said head as set out in the claims.

I claim—

1. In a combined churn and butter worker, a head, a clamping device consisting of a ring L having a handle and fitting around a trunnion or shaft and impinging on a cam surface on the head, a trunnion or shaft, a cam surface on the head, a ring M around the trunnion and impinging on the ring L, levers pivoted on the head and bearing at one end on the ring M and at the other end on the body of the vessel, substantially as described.

2. In a combined churn and butter worker, a head, a clamping device for fastening the head tightly to the vessel comprising a ring L fitting around a trunnion or shaft H′, a cam surface on the head on which the ring L impinges, a ring M, around the trunnion H′ and impinging on the ring L, a trunnion H′ attached to the head, levers pivoted on the head whose inner ends are borne up by the ring M and whose outer ends impinge when desired on the body of the vessel, and suitable means for turning the ring L on the trunnion, substantially as described.

3. In a combined churn and butter worker, a head rotatably secured to a vessel, means for securing immovably the head and vessel together, a shaft or trunnion bearing radial arms, and means for securing the trunnion tightly to the head comprising lugs or clamps on the outside of the head adapted to engage and tightly hold the radial arms borne by the trunnion and to be disengaged therefrom, and said radial arms borne by the trunnion, substantially as described.

4. In a combined churn and butter worker, a head rotatably secured to a vessel, means for immovably securing the head and vessel together, a window in the head, a lid adapted to tightly close the window, a lever pivoted on the lid, and a screw at one end of the lever for the purpose of adjusting the position of the lid in connection with the lever, substantially as described.

5. In a combined churn and butter worker, a vessel, a head rotatably secured to the vessel, means for immovably securing the head and vessel together, a window in the head, a

lid adapted to close the window, suitable means for fastening the lid tightly, a shaft or trunnion bearing radial arms, and means for securing the trunnion tightly to the head comprising lugs or clamps on the outside of the head adapted to engage and tightly hold the radial arms borne by the trunnion and to be disengaged therefrom, and said radial arms borne by the trunnion, substantially as described.

6. In a combined churn and butter worker, a head, a clamping device consisting of a ring M, levers pivoted on the head bearing at one end on the ring M and at the other end on the body of the vessel, and means intermediate the said ring M and the head for forcing the ring M outwardly from the head.

7. In a combined churn and butter worker, a head rotatably secured to a vessel, a clamping device for immovably securing the head to the vessel consisting of levers pivoted on the head and bearing at their outer ends on the body of the vessel, and means intermediate the said ring M and the head for forcing their inner ends from the head.

8. In a combined churn and butter worker, a head rotatably secured to a vessel, means for immovably securing the head and vessel together, a window in the head, a lid adapted to close the window, a lever pivoted on the lid impinging at one end on the head and at the other end provided with suitable means for forcing said end out from the head.

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