(No Model.)

2 Sheets—Sheet 1.

D. W. CURTIS.

CHURN CLOSURE.

No. 438,284. Patented Oct. 14, 1890.

Fig. 1.

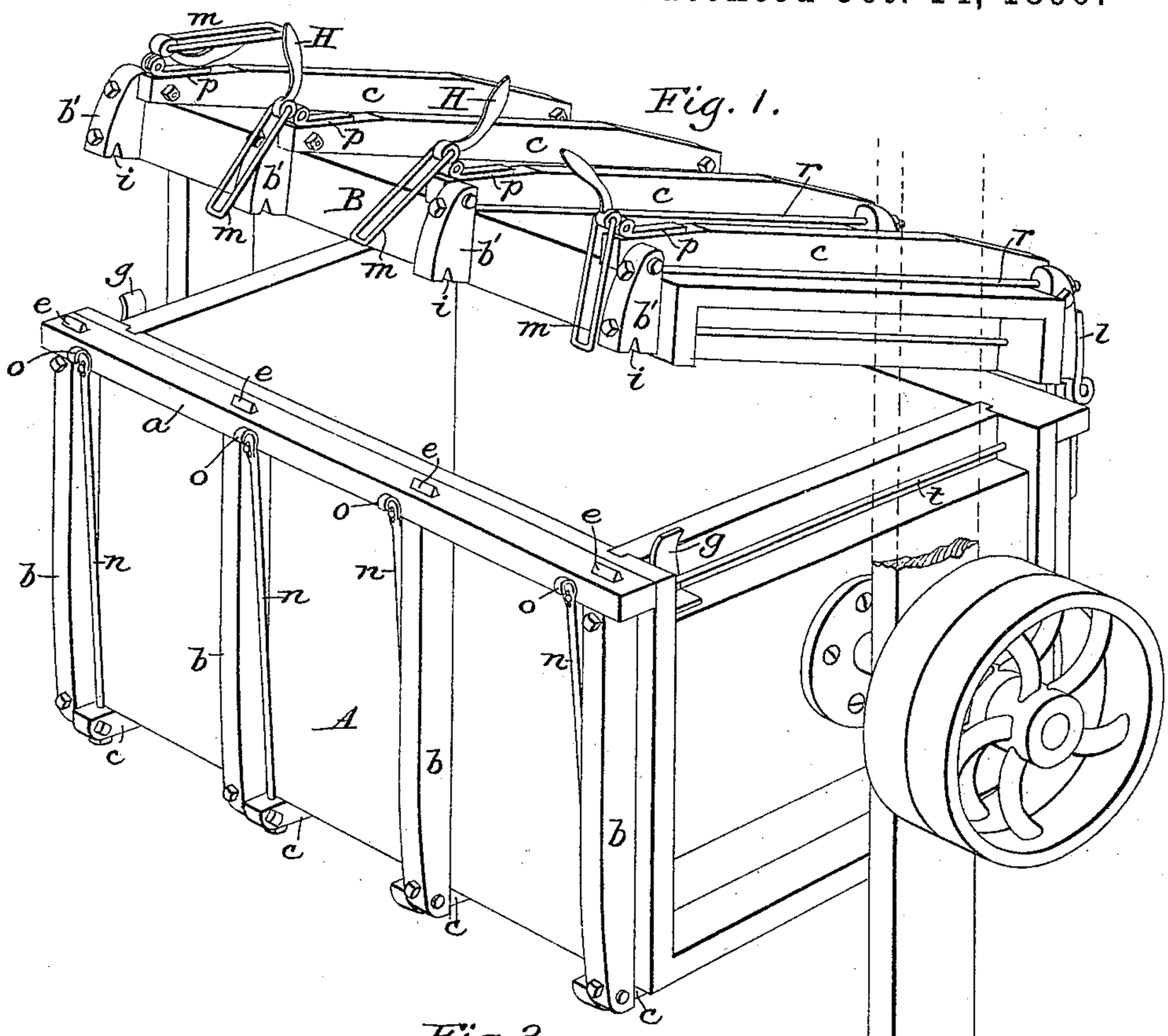
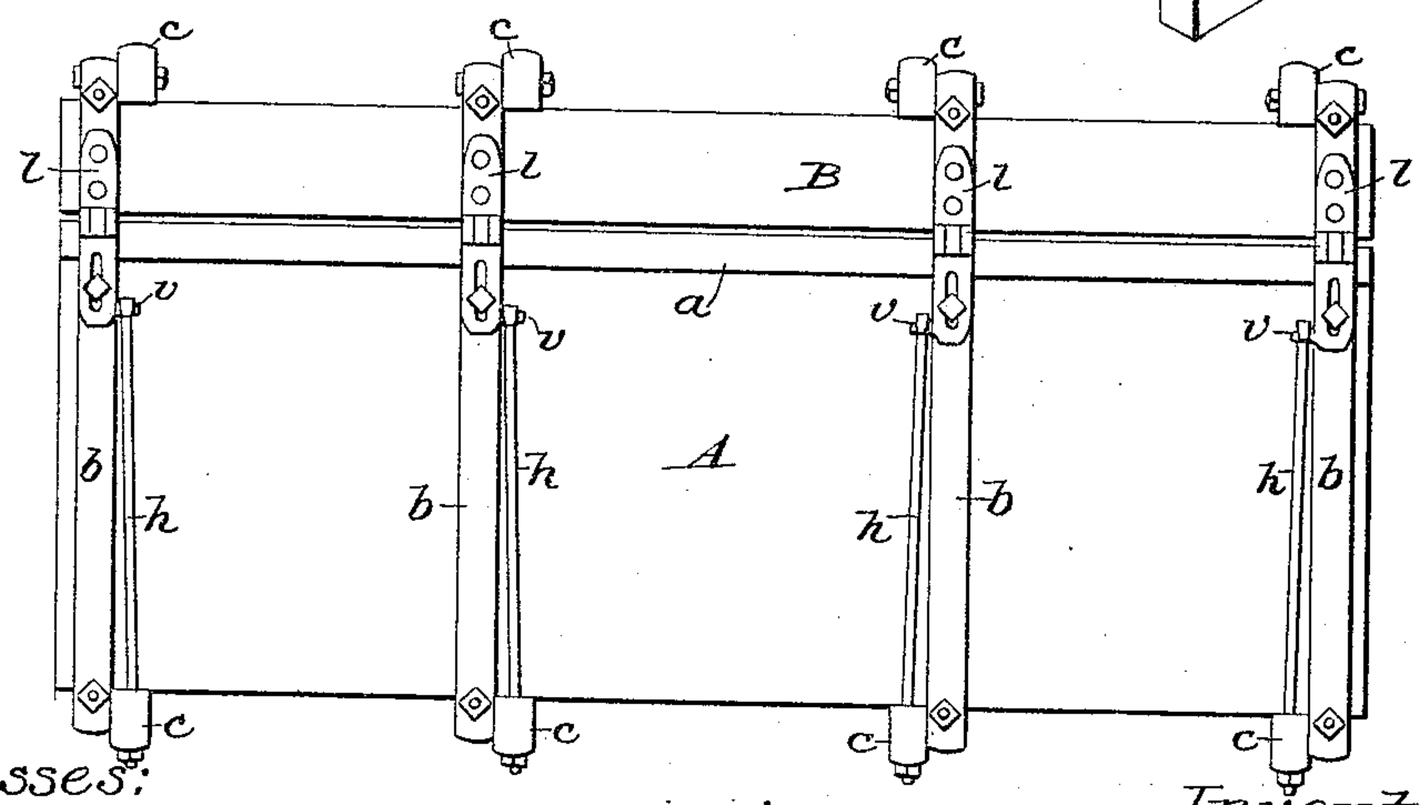


Fig. 2.



Witnesses:

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Horace A. Dodge

Inventor:

D. W. Curtis,

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Attys.

(No Model.) 2 Sheets—Sheet 2.

D. W. CURTIS.

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Fig. 3.

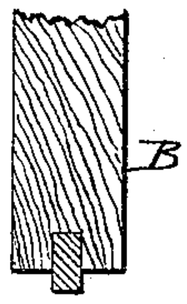


Fig. 5.

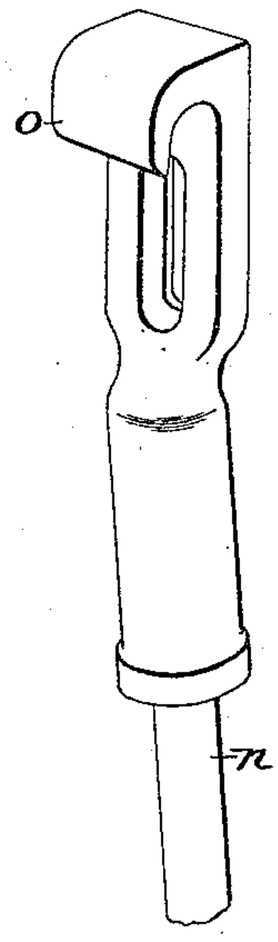
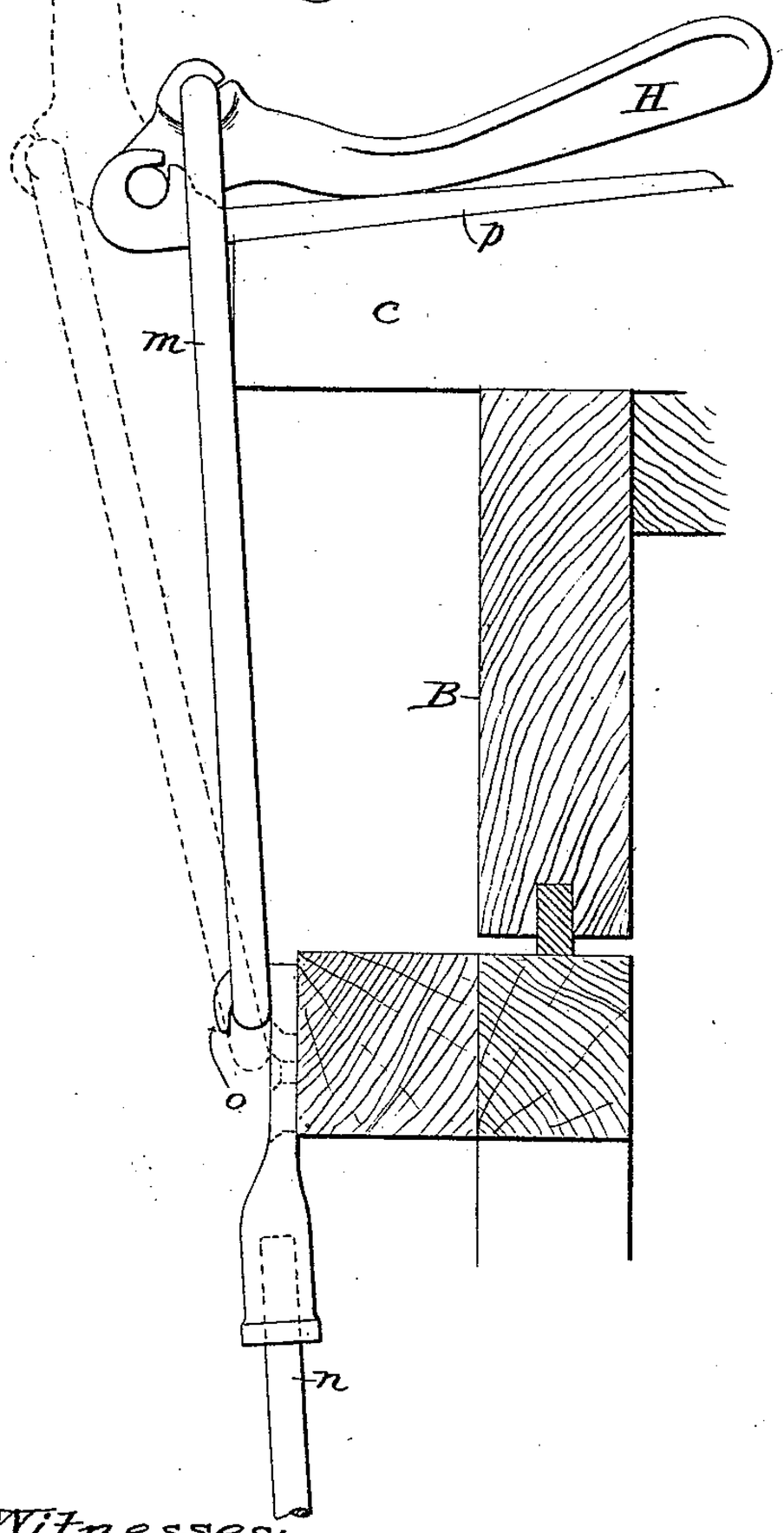


Fig. 4.



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UNITED STATES PATENT OFFICE.

DAVID W. CURTIS, OF FORT ATKINSON, WISCONSIN.

CHURN-CLOSURE.

SPECIFICATION forming part of Letters Patent No. 438,284, dated October 14, 1890.

Application filed May 28, 1890. Serial No. 353,452. (No model.)

To all whom it may concern:

Be it known that I, DAVID W. CURTIS, a citizen of the United States, residing at Fort Atkinson, in the county of Jefferson and State of Wisconsin, have invented certain new and useful Improvements in Churns, of which the following is a specification.

My invention relates to that class of churns which are revolved bodily on journals secured to its ends; and the invention consists in certain novel features of construction, as hereinafter more fully set forth.

Figure 1 is a perspective view of my improved churn with the lid or cover partially raised. Fig. 2 is a rear face view, and Fig. 3 is a sectional view, showing the packing. Fig. 4 is a view, on an enlarged scale, of a portion of the churn body and cover with the clamp in its locked position; and Fig. 5 is a perspective view of one of the adjustable hooks shown detached.

Revolving churns for use in creameries are now made of various sizes, the larger ones being intended to hold five hundred gallons of milk, weighing two and a half tons or a little more, the churn-body being usually three by three feet in cross-section and about nine feet long. To make a churn sufficiently rigid and strong to permit it to be rotated forty-five times, or thereabout, per minute and remain tight, and at the same time be capable of being opened like a trunk to the full extent of its longitudinal area to afford convenient access to its interior for cleaning it, &c., is the object of my present invention.

To accomplish these results, I construct the body A in the form of a rectangular box, the sides of which are stiffened and supported by a series of vertical bars *b*, which at their lower ends are bolted fast to the ends of cross-bars *c*, as shown in Figs. 1 and 2. At their upper ends the vertical bars are framed into a horizontal bar *a*, which extends from end to end of the churn, as shown, there being one of these bars *a* on both the front and rear sides, and they being connected at each end by tie-rods *t*, as shown in Fig. 1, similar tie-rods also extending across the bottom and connecting the lower ends of the vertical bars *b*, these tie-rods all being provided with a nut at one end for tightening them up, as may be necessary, or, if made without a head, a nut will be used at both ends. The cover or lid B is made in the same manner, with cross-bars *c* and with short vertical bars *b'* at front and rear, and which are in like manner connected by tie-rods *r*, as shown in Fig. 1.

As shown in Fig. 1, the bars *b'* on the front side of the cover are made with a V-shaped notch *i* in their lower ends to fit upon and engage with the ends *e* of the front bars *b*, which are projected above the face of the longitudinal bar *a*, and made of a corresponding shape, the object being to lock the front walls of the cover B and body A to each other when closed, and thus render both rigid and firm and prevent either from working laterally on or away from the other or bulging out at the center.

In order to make a tight joint between the cover and body, a strip of leather packing is inserted in a groove in the edge of the cover all around, as shown in section in Fig. 3, this being a well-known feature.

As the cover must fit accurately all around and must be securely fastened and held in order to prevent leakage while the churn is in motion, I secure its rear side to the body A by means of hinges *l*, as shown in Fig. 2. As there shown, the lower leaves of these hinges are made with a slot, by which means the cover (to which the other leaves of the hinges are securely bolted) can be adjusted as may be necessary to cause it to fit accurately along its whole length upon the top of the body A, as it must in order to be tight. Each hinge is provided with a lug or projection *v*, to which is secured one end of a rod *h*, the opposite end of which projects through the bottom cross-bar *c* and is provided with a nut, by which means all the hinges and the cover can be adjusted as desired, and by which also it is held securely in place when the weight of the milk is thrown upon the cover during the rotation of the churn.

It is obvious that the adjustable leaf of the hinge and its rod may be applied to the cover instead of to the body, it only being necessary to reverse their position, the result being the same in either case.

In order to fasten the front of the cover securely, I provide on the front side of the body a similar series of rods *n*, their lower ends passing through the ends of the bottom cross-

bars *c* and being secured by a nut for adjusting them, the same as those on the rear side. At their upper ends these front rods *n* are provided with a hook *o*, as shown in Fig. 1, and they are held to the bar *a* by a bolt or screw which fits in a slot made in the rod at that point to permit the rod to move up or down, as may be required by its adjustment. It is obvious that instead of the slot these rods may be held by a staple or wooden block, which will permit them to move for adjustment equally well, and in practice I prefer to make the hook and slotted portion of these rods of malleable iron separately, and either cast them on the end of the rod or screw them fast, as may be preferred, it being optional as to which plan shall be adopted, it only being necessary that they be capable of vertical adjustment.

Upon the cross-bars of the cover or lid B, I secure a plate *p*, Fig. 1, having an eye at its outer end, in which is pivoted a hand-lever H, to the front of which is pivoted a link *m* of sufficient length to engage with the hooks *o* of the front rods *n*, there being about an inch of metal between the two pivots, and they being so arranged in relation to each other and to the handle H that when the latter is thrown or pressed over back after the link has engaged with the hook *o* the link will be drawn tight, and as the handle is pressed backward it carries the upper end of the link back past the point where the handle is pivoted to the plate *p*, and thereafter the strain or force exerted tends to hold the lever in that position, and thus locks or holds it securely in the locked position. The construction and operation of these parts are more clearly shown in Figs. 4 and 5, in which the parts are shown on a larger scale. It will readily be seen that by these means the cover or lid can be forced down on the packing with sufficient force to render the joint tight and keep it so during the operation of churning, and that by the use of the adjustable rods at front and the adjustable hinges and rods at the rear the cover can be adjusted to fit upon the body with accuracy at all points of contact, and so as to compensate for any swelling or shrinking of the parts or any wear or compression of the packing.

By attaching the fastening handles and links to the lid or cover they can be thrown back with the cover, and thus be out of the way.

At each front corner of the body A, I secure a metal plate *g*, its upper end being curved outward and arranged to project above the top edge of the body, as shown in Fig. 1, so that when the cover is shut down its ends, striking against the inner faces of these plates or guides, will be so guided as to insure the closing of the cover in its exact position. These guides compensate for any looseness caused by wear or otherwise in the joints of the hinges. I would remark that these guides, with the hooks and such other metal parts as are used, are preferably galvanized to prevent their rusting.

It is obvious that the position of the notches *i* and the interlocking points *e* may be reversed—that is, the points *e* may be made on the bars *b'* of the cover and the notches *i* be formed in the bar *a* for them to engage in—and that they need not necessarily be V-shaped, it only being necessary that they shall be so constructed and arranged that when the cover is closed they shall interlock, as described; but I prefer to make them as shown, as if the notches or recesses were made on the lower part or body they would be more difficult to clear and keep free from the butter, milk, or other matter, and by making their sides inclined, as shown, they serve to draw the cover into position as it is closed.

By these several improvements I am enabled to make this style of churn of a large size and sufficiently strong and rigid to keep its shape and that can be kept tight and secure at all times.

I am aware that a patent has been granted for a barrel-churn having a removable cap or cover held thereon by means of a metallic frame and rods with thumb-nuts and that trunks have been provided with metallic corner-pieces having interlocking lugs and recesses, and therefore I do not claim such; but,

Having thus described my invention, what I claim is—

1. A churn consisting of an elongated rectangular body and cover mounted on trunnions at its ends, said body and cover being strengthened by a series of inclosing-bars arranged at right angles to the axis of the churn and having their ends arranged to interlock at their points of meeting along the front of the churn when closed, substantially as and for the purpose set forth.

2. In combination with a churn substantially such as shown, one or more hinges *l*, having one leaf adjustably secured, and a rod *h*, for adjusting and holding the same, substantially as and for the purpose set forth.

3. In combination with the churn-body A and its cover B, the clamping-lever H and its link *m* and the adjustable rod *n*, provided with a hook arranged to engage with said link, all being constructed and arranged to operate substantially as shown and described.

4. In combination with the body A, provided with hooks *o*, the cover B, provided with the pivoted levers H, having links *m* secured thereto, and arranged to operate as and for the purpose set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

DAVID W. CURTIS.

Witnesses:
HARRY H. CURTIS,
OSCAR B. CORNISH.