No. 860,895. PATENTED JULY 23, 1907.

A. BLAIR.

CHURN.

APPLICATION FILED DEC. 22, 1906.

Fig. 1.

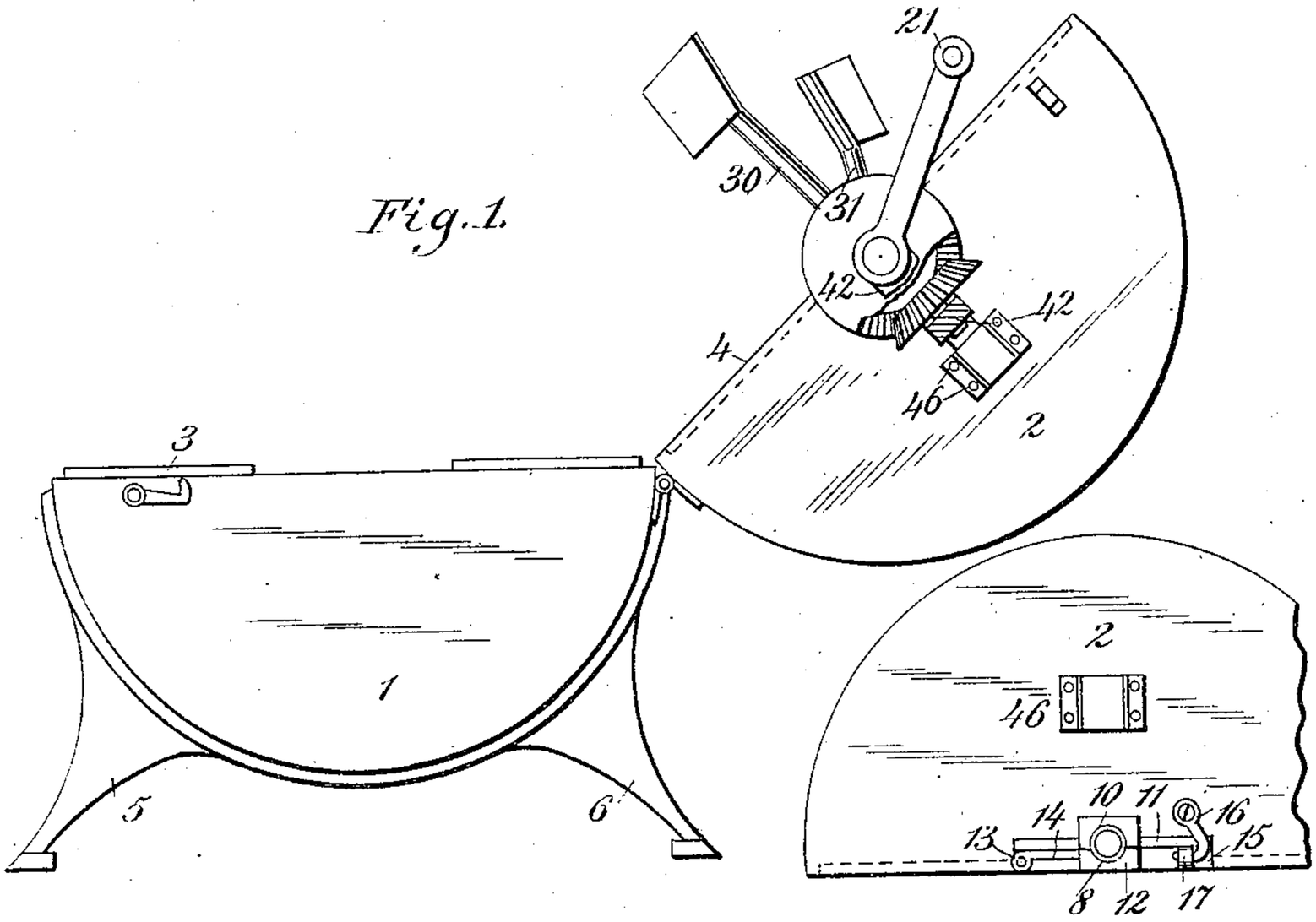


Fig. 2.

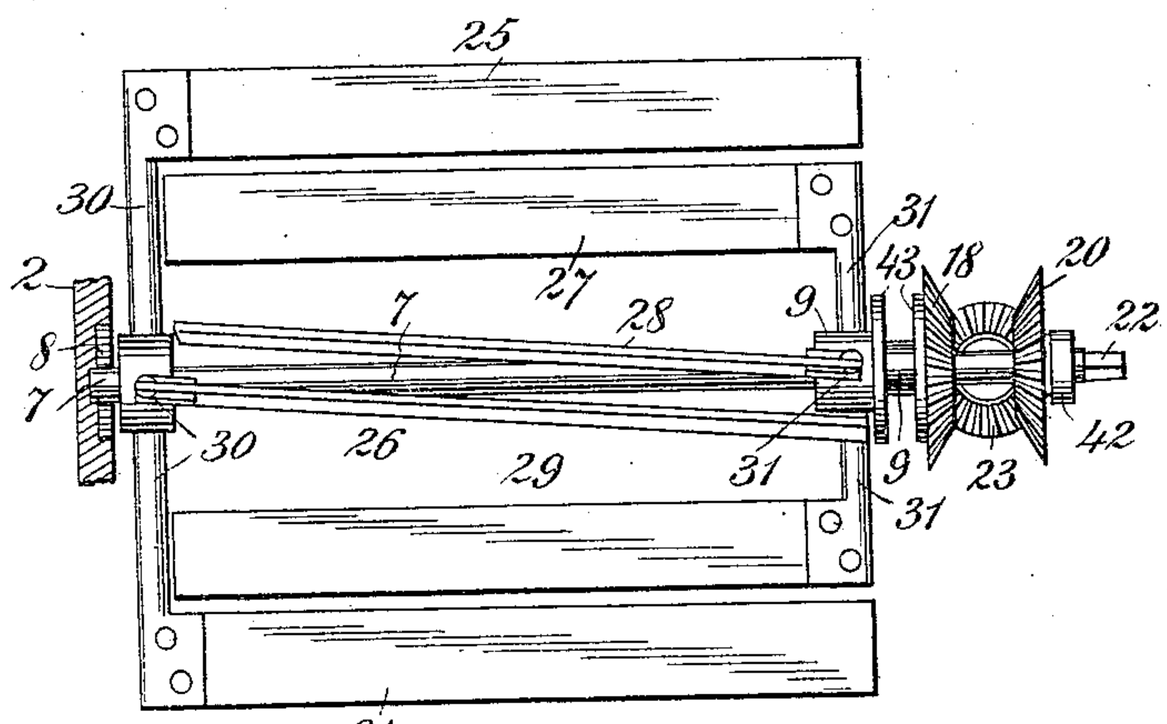
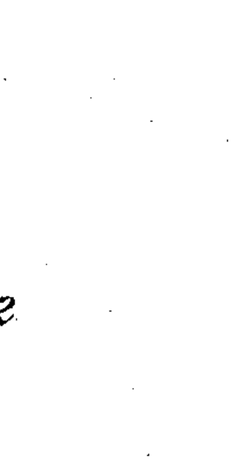


Fig. 3.



24

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UNITED STATES PATENT OFFICE.

ALBERT BLAIR, OF GENESEO, ILLINOIS.

CHURN.

No. 860,895. Specification of Letters Patent. Patented July 23, 1907.

Application filed December 22, 1906. Serial No. 349,142.

To all whom it may concern:

Be it known that I, ALBERT BLAIR, a citizen of the United States, and a resident of Geneseo, Illinois, have invented new and useful Improvements in Churns, of which the following is a specification.

My invention relates to churns and it has for its object to provide a churn which will operate to beat the fluid to be churned first in one direction and then in another but at all times toward the center of the churn.

To this end it consists in providing a plurality of sets of paddles and mechanism so arranged that contiguous sets of the said sets of paddles will move in opposite directions.

The invention further consists in providing a churn having a plurality of sets of paddles, the paddles of any one set being located at an angle less than 90° to the direction of the motion of the said paddles both when measured in a vertical plane and when measured in a horizontal plane whereby upon the movement of contiguous sets of the said paddles in opposite directions, the material churned will be directed inward to the axis about which the said paddles are turned and from the ends of the axis.

The invention consists in other features illustrated in the accompanying drawing, described in the following specification and set forth and claimed in the claims.

Referring to the drawing Figure 1 illustrates an end view of the churn opened. Fig. 2 illustrates a top view of the mechanism removed from the churn. Fig. 3 illustrates a side view of the top showing one of the bearings of the mechanism whereby the mechanism may be easily and completely removed from the churn.

I shall now describe my invention in detail by reference to the specific parts illustrated in the drawing and by use of the numbers associated with the said parts.

1, Fig. 1 of the drawing is the body of the churn and 2 is the top or cover of the churn. The cover in section is also shown in Fig. 3. The cover of the churn fits tightly over the upper edge of the body of the churn. The edge 3 of the body of the churn is stepped and the same is true of the edge 4 of the cover of the churn so that the two will snugly fit into each other, which permits a tight closing of the cover of the churn upon the body of the churn. The churn is supported by legs 5 and 6.

The body and the cover when combined together form a cylindrical receptacle which is adapted to receive the material which is to be churned. The mechanism for churning the material is located in the cover. This mechanism comprises a shaft 7 which is supported at one end by the bearing 8 which is shown in section in Fig. 2. This bearing is located in the end of the cover and near the edge thereof. The other end of the shaft has a bearing in the sleeve 9 which in turn is located in the bearing 10. The bearing 10 is composed of two parts. One part 11 is fixed in the cover of the churn. While the other part 12 is hinged to the cover by means of the hinge 13. One side 14 of the hinge is attached to the cover while the other side supporting the bearing 12 is movable and can be swung away from the cover. The bearing has an extension 15 which is provided with an eye 17. A hook is also located on the cover and may be inserted in the eye 17. This closes the bearing about the sleeve 9. Pins may be located in the extension 15 which are adapted to register with holes located in the metal flanges of the upper part of the bearing 11 and thus prevent any lateral movement of the hinged portions of the bearing. By merely opening the bearing 10 and withdrawing the shaft from the bearing 8 the mechanism may be removed from the churn.

The cog wheel 18 is attached to the sleeve 9 while the cog wheel 20 is attached to the shaft 7. A manual means such as a handle 21, may be used to operate the mechanism or a motor may be substituted for the handle. The handle, if used, is attached to the square end 22 of the shaft 7 and as the handle turns it revolves the cog wheel 20 connected to the shaft 7 in one direction. The cog wheel 18 is mechanically connected to cog wheel 20 by an intermediate cog wheel 23 so that the cog wheel 18 and the sleeve 9 will move in the opposite direction from that which the cog wheel 20 and the shaft 7 is moved when turned by the handle. The bearing or sleeve 9 may be provided with two wide external flanges 43 which extend or lap over the sides of the bearing and effectually prevent any escape of the material operated on. A movable bracket 42 may also be provided which is attached to the shaft 7. This is used particularly for the support of the cog wheel 23. The lower end of bracket 42 is adapted to slide into a staple 46. The bracket 42 may be permanently attached to the cover if disconnected from the shaft.

To the shaft 7 is attached the paddles 24, 25 and 26. To the sleeve 9 is attached the paddles 27, 28 and 29. The paddles are in each case connected to the sleeve or the shaft by means of the arms 30 and 31. The paddles are located in a plane which is at an angle to the line connecting the center of the paddle and the axis. This inclination is such that the part of the blade or paddle that is farther from the axis is located at a point further along the direction of motion of the paddle when the same is moved in the direction for which the mechanism was designed, that is to say, the paddle or blade is so inclined that the top of the paddle is located at a point in advance of the bottom of the paddle so that as the paddle is turned, it will scoop the material and direct it to the center of the cylindrical churn. The paddles are also so inclined that they are located at an angle to the axis so that the plane of the paddle will intersect the axis. The inclination is such that the arms which support the blades are preferably in the lead when the paddles move in the direction for which the mechanism was designed. This also tends to force the material to be churned from the ends and towards the

center of the churn. The outside paddles extend to the inside surface of the body and cover of the churn to prevent a collection of material outside of the paddles.

As the paddles are turned in the operation of the churn, the outside paddles move in one direction and the inside paddles move in the other direction. The paddle 25 forces the material inward toward the axis and towards the right of the churn and causes it to strike the succeeding paddle of the other set, that is, paddle 27 which moves in the opposite direction and by its inclination forces the material to the center, that is, toward the axis of the churn and towards the left of the churn. The blade 27 then passes the blade 26 which again tends to force the material towards the center of the churn and towards the right of the churn when the material is again met by the paddle 29 which operates again in the same way that paddle 27 operates so that all of the paddles when in operation tend to pile the material churned into the center of the churn and cause the material to collect about the central portion of the axis of the churn.

This produces an exceedingly efficient churn. It moreover provides a means whereby the mechanism may be readily removed from the churn. It also provides a churn wherein the material may be manipulated. It further provides a means for completely removing the mechanism from the churn for the purpose of cleaning or for any other desirable purpose.

The invention may be modified by those skilled in the art without departing from the spirit thereof.

The invention may be used for many purposes although it is particularly designed for the purpose of churning milk. Nevertheless I claim the right of monopolizing any of the uses to which my invention may be put by reason of the patent for which I make application.

What I claim as new and desire to secure by Letters Patent is as follows:—

1. In a churn the combination of the body of the churn, a shaft and a sleeve surrounding the said shaft, paddles, the said paddles inclined to the said shaft and also so inclined as to direct the material to be churned inward, a socket bearing for supporting one end of said shaft, a hinged bearing adapted to be locked about the said sleeve and said shaft, a gear wheel attached to the said shaft and a gear wheel attached to the said sleeve, a third gear wheel adapted to cause the said gear wheels to move in opposite directions, a frame for supporting the said gear wheels, a socket for supporting the said frame.

2. In a churn the combination of the body of the churn, two sets of paddles adapted to move in opposite directions, one set of said paddles being supported on a shaft, the other set of said paddles being supported on a sleeve, the said sleeve being located on the outside of the said shaft, a socket bearing located in one end of the said body of the churn, hinge bearing consisting of two metallic pieces hinged together adapted to inclose the said shaft in the said sleeve and located in the other end of the body of the churn, a gearing attached to the said shaft and a gearing attached to the said sleeve, a frame attached to the said shaft, an idler supported on the said frame and adapted to move between the gear of the shaft and the gear of the said sleeve and a socket for receiving the said frame and supporting the same whereby the said mechanism may be easily removed from the said churn by opening the said hinged bearing and withdrawing the mechanism from the said socket bearing and the said frame from its socket.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALBERT BLAIR.

Witnesses:
WM. SANTEE,
THEO. BECKER.