

B. M. GRIFFITH & W. T. McCULLOUGH.
CHURN.

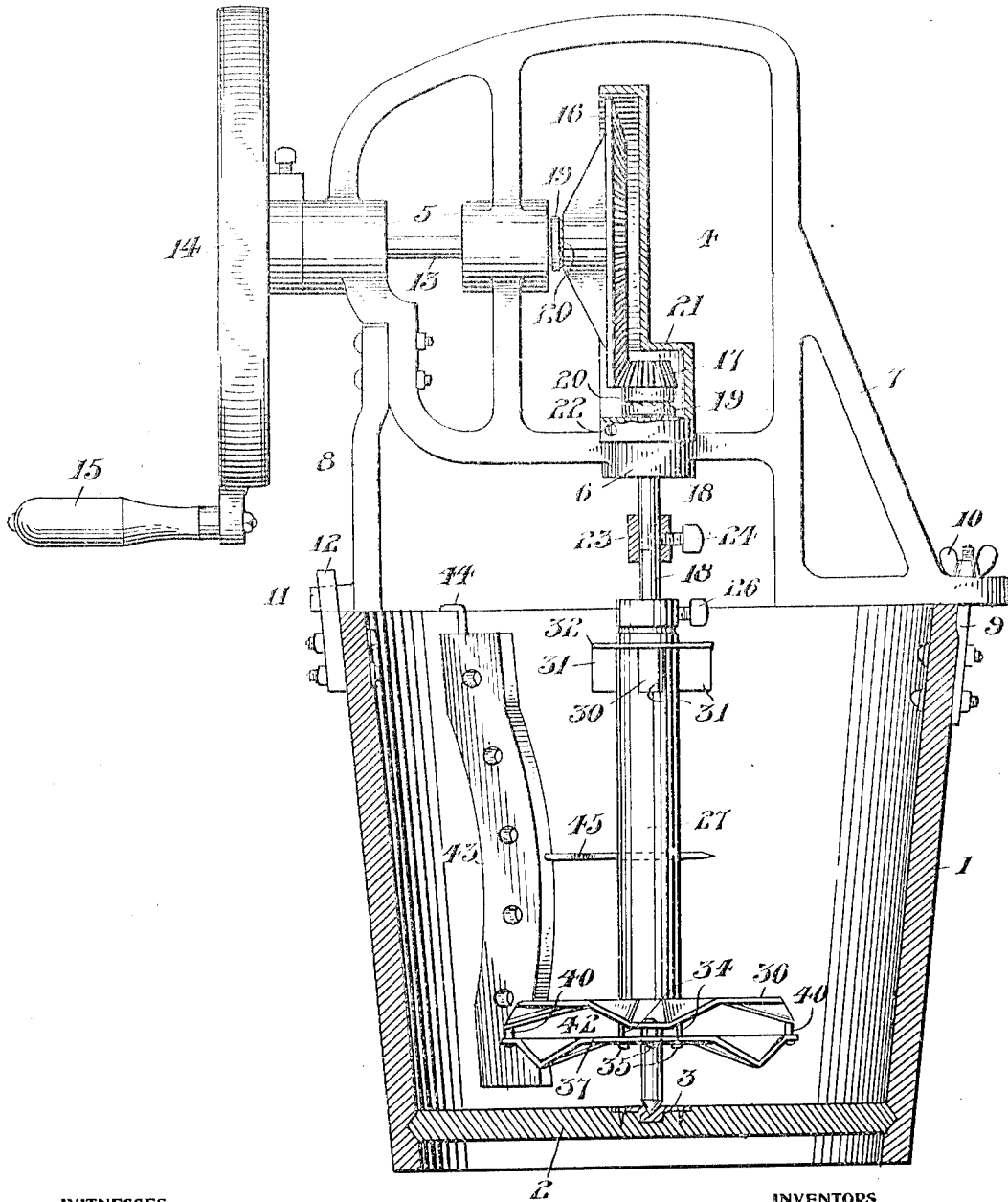
APPLICATION FILED APR. 24, 1912.

Patented Oct. 8, 1912.

2 SHEETS—SHEET 1.

1,040,664.

FIG. 1



WITNESSES

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2 SHEETS—SHEET 2.

FIG. 2

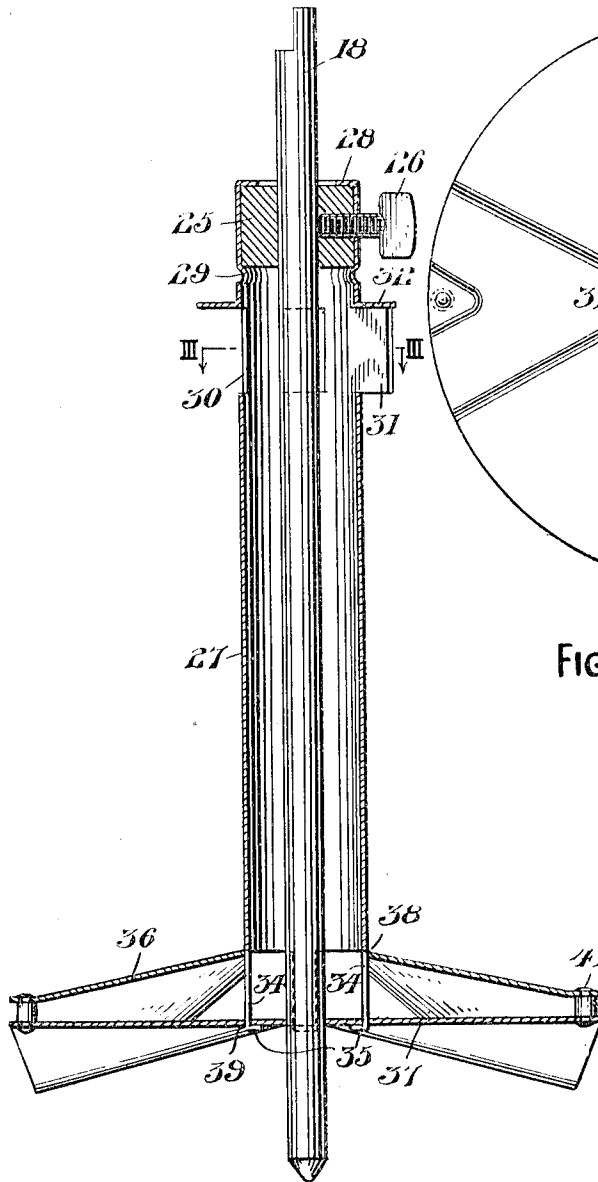


FIG. 3

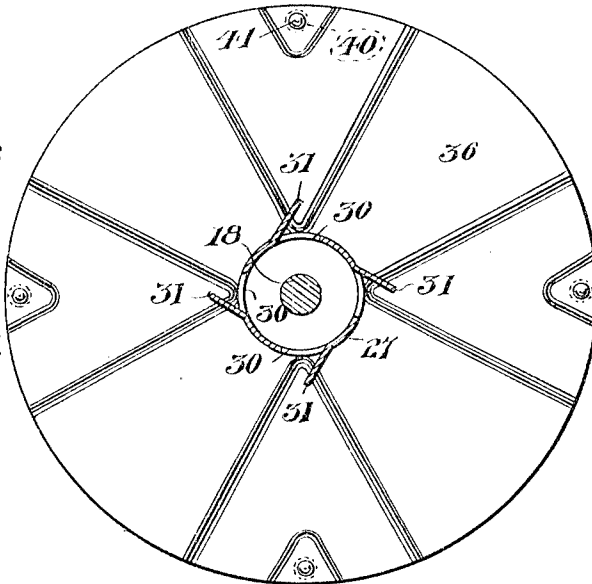


FIG. 4

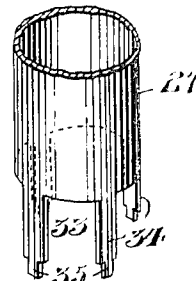
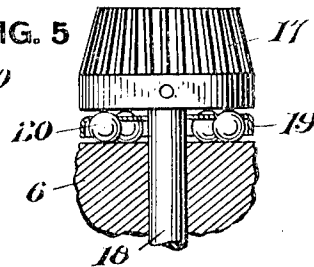


FIG. 5



WITNESSES

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UNITED STATES PATENT OFFICE.

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CHURN.

1,040,664.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed April 24, 1912. Serial No. 692,873.

To all whom it may concern:

Be it known that we, BENJAMIN M. GRIFFITH and WILLIAM T. McCULLOUGH, citizens of the United States of America, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Churns, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to churns, and more particularly to certain new and useful improvements in connection with that type of churn disclosed in an application filed by one of the present applicants under date of September 28th, 1911, Serial No. 651,725.

Besides having the same objects in view as disclosed in the pending application, the present invention aims to provide a churn that is more compact, durable, safer to use, less expensive to manufacture and having a higher degree of efficiency for the purposes for which it is employed than the churn referred to in the pending application.

Our invention further aims to accomplish the above results by a combination of mechanical elements that will be hereinafter specifically described and then claimed, and reference will now be had to the drawings, wherein there are illustrated the principles of our invention, in which:—

Figure 1 is a vertical sectional view of the churn, Fig. 2 is an enlarged vertical sectional view of a combined agitator and aerator, Fig. 3 is a horizontal sectional view of the same taken on the line III—III of Fig. 2, Fig. 4 is a perspective view of a portion of the aerator, and Fig. 5 is an enlarged detail sectional view of an anti-friction bearing adapted to form part of the churn.

Referring to the drawings in detail, like numerals denote corresponding parts throughout: 1 denoting a receptacle in the form of a tub that has the bottom 2 thereof provided with a central bearing 3.

4 generally denotes a frame for the operating mechanism of the churn and the design of said frame forms the subject matter of a separate application. The frame as shown in Fig. 1 has alining horizontal bearings 5, a vertical bearing 6 and legs 7 and 8, the former being swiveled upon a pin 9, carried by the outer side of the receptacle 1, at the upper edge thereof, said leg being re-

tained upon the pin by a winged thumb nut 10. The leg 8 has a projection 11 that engages under a keeper 12 secured to the upper outer edge of the receptacle 1, opposite the pin 9.

13 denotes a driven shaft journaled in the bearings 5 and mounted upon the outer end of the shaft is a large wheel 14 provided with a crank 15 by which said wheel is manually operated. The inner end of the shaft has a large beveled gear wheel 16 meshing with a small beveled gear wheel 17, carried by the upper end of a sectional drive shaft 18 that is journaled in the bearing 6.

19 denotes retaining rings interposed between the bearing 5 and the beveled gear wheel 16 and the bearing 6 and the beveled gear wheel 17, these retaining rings holding anti-frictional balls 20 in position to insure an anti-frictional movement of the beveled gear wheels relatively to the bearings.

21 denotes a guard casing secured to the bearing 6, as at 22 and inclosing the toothed surfaces of the beveled gear wheels 16 and 17, thereby reducing to a minimum the liability of the fingers being injured by contacting with said wheels.

23 denotes a coupling connecting the sections of the drive shaft 18, said coupling being secured to the shaft by a set screw 24. The lower section of the drive shaft is revolutely supported by the bearing 3 and mounted upon said shaft, within the receptacle 1, is a collar 25 that is retained thereon by a set screw 26. The collar 25 is in proximity to the upper end of the lower section of said shaft and arranged upon said collar is a tube 27 of greater diameter than the drive shaft 18. The tube 27 has the upper end thereof flanged, as at 28 to engage the upper edges of the collar 25, and said tube is reamed or provided with an inwardly projecting bead 29 that engages the lower edge of the collar, thereby fixedly holding the tube 27 relatively to the collar. The tube 27, adjacent to the collar 25, is cut and sheared, as at 30 to provide openings and the cut and sheared material is bent outwardly at a tangent to the tube to provide deflectors 31, as best shown in Fig. 3. Secured to the upper edges of the deflectors are top plates 32, these top plates deflecting air and matter toward the bottom of the receptacle 1. The lower end of the tube 27 is

cut away, as at 33 to provide equally spaced depending arms 34 that have the lower ends thereof reduced to provide prongs 35.

36 and 37 denote two plates spaced apart 5 and constituting an aerator and agitator head. The plate 36 has an opening 38 to provide clearance for the lower end of the tube, and the plate 37 has openings 39 for the prongs 35, which are bent against the 10 under side of the plate 37. The outer edges of the plates 36 and 37 are spaced apart by sleeves 40 and extending through said sleeves are rivets 41 that hold the plates 36 and 37. The interior of the aerator head is 15 in communication with the tube 27 and the plates 36 and 37 are bent to provide large openings 42, best shown in Fig. 1.

43 denotes one of a set of vertically disposed apertured agitators that are suspended 20 from the upper edges of the receptacle 1 by hooks or clamps 44. The agitator 43 has a curved arm 45 that engages in the wall of the receptacle 1 and maintains the agitator radially disposed relatively to the vertical 25 axis of the receptacle. The agitator 43 extends into proximity to the bottom 2 of the receptacle, and the aerator head is similarly located, whereby air can be distributed from the openings 42 into the fluid within the re- 30 ceptacle. The aerator head serves as an agitator in conjunction with the agitator 43, and as the fluid within the receptacle is churned, the solid matter or precipitate is carried to the surface of the fluid, thus per- 35 mitting of its ready removal, also allowing the unchurned quantity of fluid to be thoroughly agitated. By the injection of air, which is admitted to the aerator head through the medium of the openings 30 and 40 the tube 27, the churning is more expeditiously performed, and a better grade of product obtained. By imparting a rotary movement to the drive shaft 18, the deflec- 45 tors 31 gather in the air that is forced down-

wardly in the tube 27, and should solid mat- 45 ter enter said openings, it can readily find its way through the aerator head and flow to the surface of the fluid within the churn.

From the foregoing it will be observed 50 that the combined aerator head and agitator can be manufactured at a comparatively small cost compared to the construction disclosed in the pending application, and that the frame for the operating mechanism is 55 such that it can be used in connection with any type of receptacle equipped with a hold-fast means for retaining the frame in position.

We would have it understood that the invention is susceptible to such variations and 60 modifications as fall within the scope of the appended claim.

What we claim is:—

A churn apparatus including an aerating and agitating head comprising an upper and 65 a lower circular plate, said upper plate having radially disposed depressed portions alternating with plane portions and said lower plate also having radially-disposed 70 depressed portions alternating with plane portions, the depressed portions in the upper plate being of greater width than the depressed portions in the lower plate and the 75 depressed portions in each plate being disposed opposite the plane portions in the other plate, spacing-members interposed between the outer termini of the depressed portions of the upper plate and plane portions of the lower plate, and means securing 80 said spacing-members in position and connecting the two plates together.

In testimony whereof we affix our signatures in the presence of two witnesses.

BENJAMIN M. GRIFFITH.

WILLIAM T. McCULLOUGH.

Witnesses:

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K. H. BUTLER.