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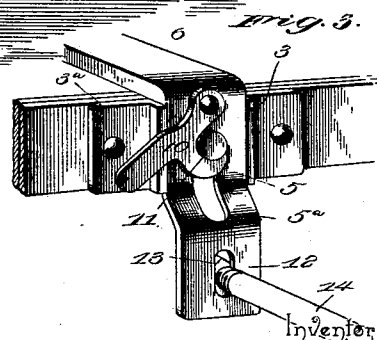
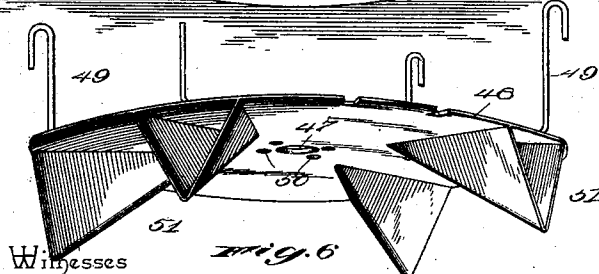
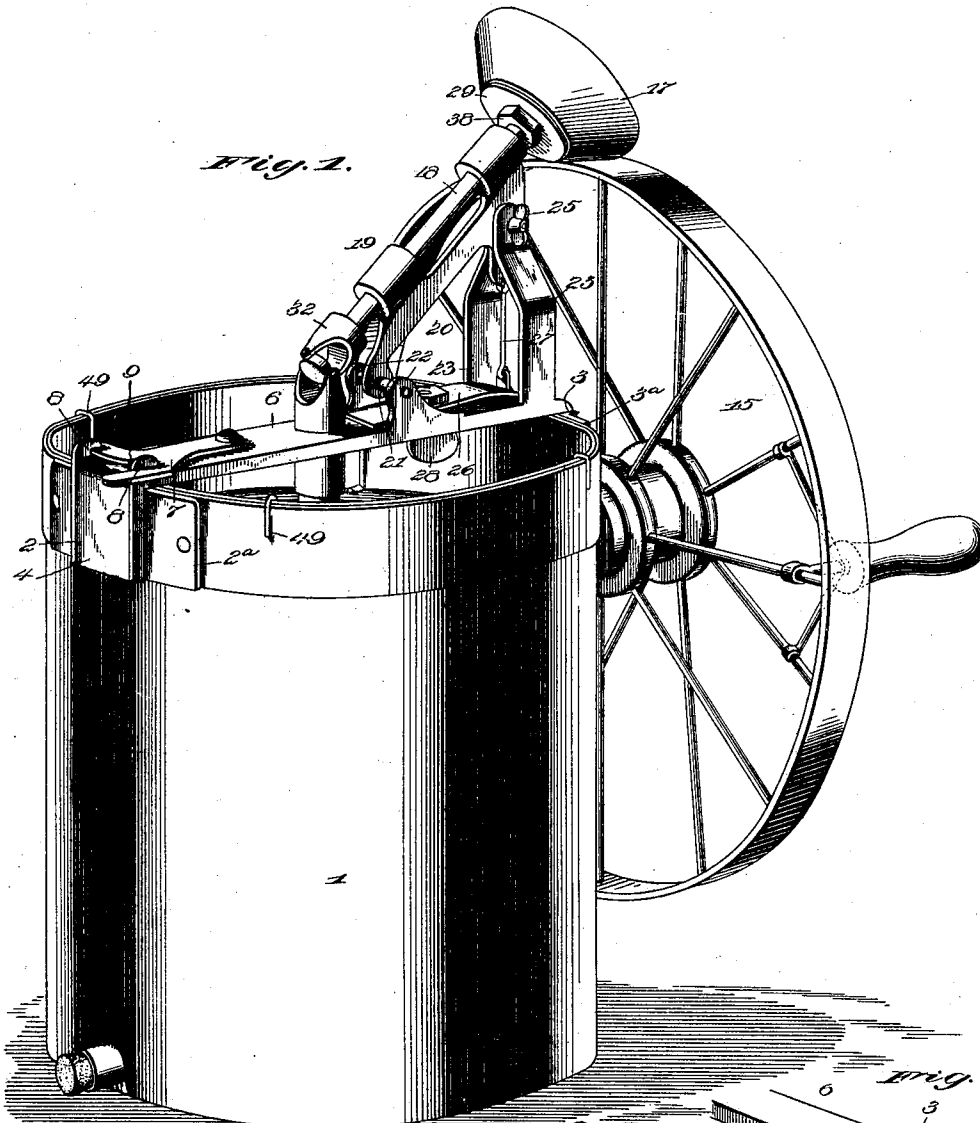
Patented Nov. 14, 1899.

J. B. NEUENDORFF.
CHURN.

(Application filed June 4, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

Wm. F. Doyle.

By his Attorneys.

John B. Neuendorff.

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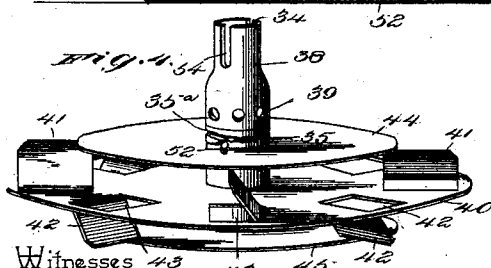
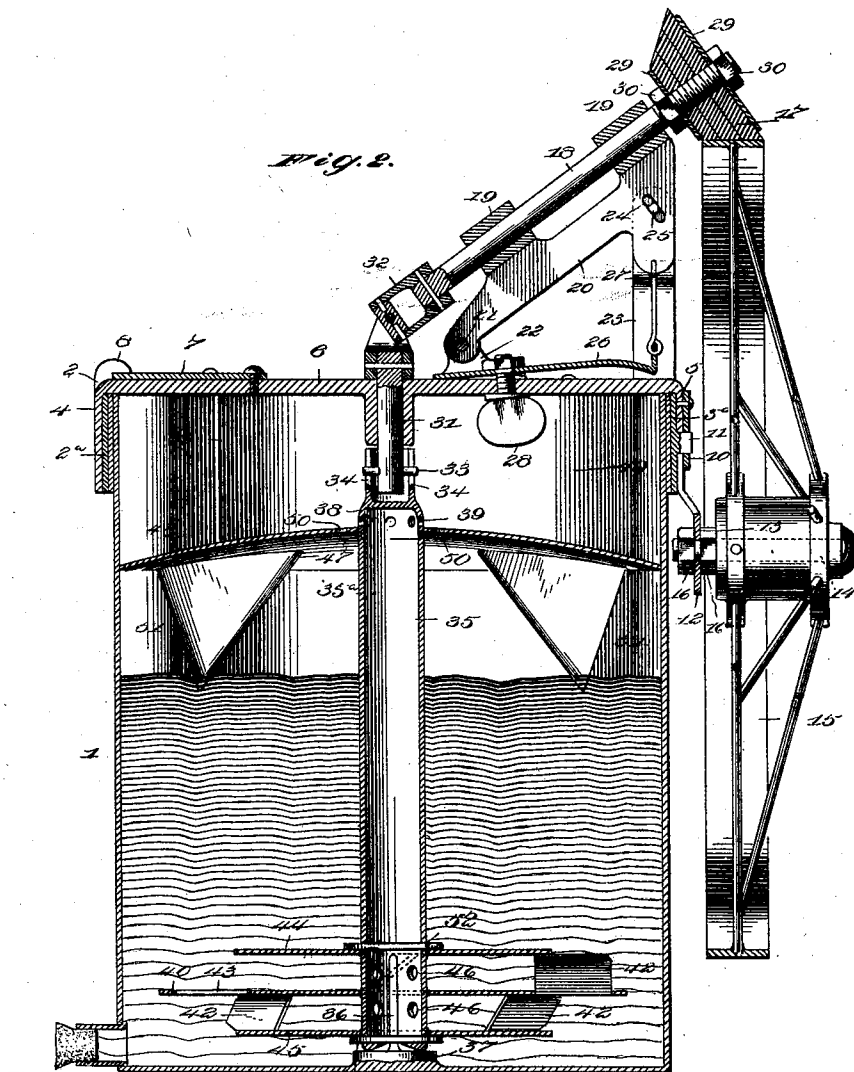
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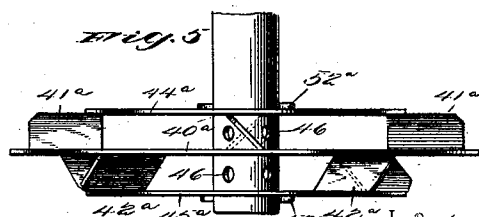
(No Model.)

2 Sheets—Sheet 2.



Witnesses
H. B. Doyle.

H. B. Doyle



John B. Neuendorff, Inventor

By - his - Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

JOHN B. NEUENDORFF, OF SAN ANTONIO, TEXAS.

CHURN.

SPECIFICATION forming part of Letters Patent No. 637,014, dated November 14, 1899.

Application filed June 4, 1898. Serial No. 682,556. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. NEUENDORFF, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Churn, of which the following is a specification.

My invention relates to churns, and has for its object to provide a simple construction and arrangement of operating parts whereby motion may be communicated to the dasher without the use of cog-gearing or belting, and in connection therewith to provide suitable adjusting devices for securing an operative relation between the members.

A further object of the invention is to provide a simple and efficient construction of dasher adapted for rotation in either direction and capable of producing an efficient vacuum to be supplied by air admitted through the dasher-shaft; and a further object in view is to provide a simple and efficient construction of guard or splasher-plate designed to serve as a means of preventing exterior objects from falling into the contents of the receptacle, and to prevent splashing of such contents during the operation of the dasher.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a churn mechanism constructed in accordance with my invention. Fig. 2 is a central vertical sectional view of the same. Fig. 3 is a detail view in perspective of the driving-wheel end of the supporting-bar. Fig. 4 is a detail view in perspective of the dasher. Fig. 5 is an edge view of a slightly-modified construction of dasher. Fig. 6 is a detail view of the guard or splasher-plate detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Applied to the wall of a receptacle 1, of any suitable size and construction, are seats 2 and 3, preferably formed upon securing-plates 2^a and 3^a, which are riveted or otherwise securely fastened to the receptacle-wall, said seats being open at their outer sides and at their upper ends to receive the downturned ex-

tremities 4 and 5 of a bearing-bar 6, which transversely spans the receptacle, said bearing-bar thus being detachably fitted upon the receptacle. Said bearing-bar is also preferably provided with fastening devices which in the construction illustrated consist of a horizontally-swinging latch 7, mounted for horizontal movement and adapted to engage notched extensions 8 on the seat 2, said latch having a segmental engaging face provided at an intermediate point with a notch 9 to enable the latch to be arranged in operative relation with the ears 8 without swinging the latch far enough to carry the free end of its segmental face beyond the interval between said ears, and a latch 10, pivotally mounted for swinging movement in a vertical plane upon the downturned extremity 5 of the bearing-bar for engagement with a stud 11, projecting perpendicularly from the floor of the seat 3, said extension or ear 5 being vertically slotted, as shown at 5^a, to receive the stud 11.

The rear extension or ear 5 is carried below the plane of the seat 3 to form a bearing-plate 12, having an opening 13, in which is arranged a stub-shaft 14 for the driving-wheel 15, said stub-shaft being held in place by nuts 16 and 16^a, threaded upon the shaft and bearing against opposite sides of the bearing-plate 12, and in practice I preferably elongate the opening 13 vertically to provide for the vertical adjustment of the stub-shaft or the adjustment thereof toward and from the plane of the bearing-bar, for a purpose hereinafter explained. The driving-wheel is provided with a friction-rim for contact with the preferably-beveled periphery of a friction-pulley 17, carried by a driven or countershaft 18, mounted in bearings 19 upon a bracket 20, supported by the bearing-bar. In the construction illustrated this bracket is provided at its lower inner end with a pivot consisting of trunnions 21, fitted in bearing-ears 22, rising from the bearing-bar 6, and the outer upper end of the bracket is arranged in a guide formed by the adjacent spaced ends of uprights 23, also rising from the bearing-bar contiguous to the depending extremity 5. Concentric with the pivot 21 of the bracket the latter is provided with a slot 24, through which extends a set-screw 25, connecting the sides of the guide formed by the uprights 23, said sides or walls

of the guide being unconnected at their upper ends, and hence being adapted to yield laterally or toward and from the plane of the bearing-bracket, whereby when the set-screw is tightened the faces of the guide may be brought into tight frictional contact with opposite surfaces of the bracket to lock the latter at the desired adjustment. The object of this adjustment of the outer or free end of the bracket is to vary the frictional contact of the pulley 17 with the rim of the driving-wheel, and in order that a nice adjustment of the pulley may be attained I preferably employ an adjusting mechanism including a plate-spring 26, connected at its free end by a link 27 with the free end of the bracket 20, and a set-screw 28, connected with the spring at an intermediate point for drawing the free end thereof down to resist the upward movement of the friction-pulley to a greater or less extent. It is obvious that the set-screw 25 may be allowed to remain loose to give a freedom of movement of the bracket in opposition to the tension of said plate-spring to enable the friction-pulley to yield to inequalities in the bearing-rim of the driving-wheel.

The construction of the friction-pulley embodies a body portion of friction material, such as leather or rubber, interposed between bearing plates or disks 29 and held in place by means of nuts 30.

The counter-shaft is operatively connected with a dasher-shaft 31 by means of a universal joint 32, said dasher-shaft being mounted in a central vertical bearing in the bearing-bar, and said dasher-shaft is provided with a cross-pin 33 for engagement with opposite registering slots 34 in the upper end of the tubular dasher-staff 35, of which the lower end is mounted upon a bearing-pin 36, rising from a bearing-block 37 at the center of the bottom of the receptacle 1. The dasher-staff consists of a stem 35^a and a separate socket-plug 38, fitted in the upper end of the stem and having an upper socket portion closed at its bottom and provided with the above-described slots 34, and also having below said socket portion a plurality of inlet-ports 39, communicating with the bottom of the stem.

The dasher consists of a horizontal disk 40, provided with upstruck inclined deflecting-ears 41 and 42, extending, respectively, upwardly and downwardly from the disk contiguous to openings 43 formed in the disk, (said ears consisting of the portions of the disk cut out at three sides of the opening,) and guard-disks 44 and 45, arranged, respectively, above and below and spaced from the plane of the blade-disk 40 and secured, respectively, to the upturned and downturned ears or blades 41 and 42, said guard-disks being imperforate and being of smaller diameter than the blade-disk, as clearly shown in the drawings. Also the dasher-stem is provided, respectively, above and below the plane of the blade-disk and between the plane of

said blade-disk and the planes respectively of the guard-disks with outlet openings or ports 46.

In the construction illustrated in Figs. 2 and 4 the ears or blades 41 and 42, which extend, respectively, upwardly and downwardly from the plane of the blade-disk, inclined in opposite directions—namely, rearwardly and forwardly—toward their free ends, whereby when the dasher is rotated in one direction the upper blades deflect the liquid upwardly to create a partial vacuum, which is supplied by air admitted through the upper series of outlet openings or ports. While the lower blades deflect the liquid upwardly through the openings 43 to create a partial vacuum below the plane of the blade-disk for supply by the lower series of outlet-ports, the rotary motion of the dasher in the opposite direction, on the other hand, reverses this operation by causing the upper blades 41 to deflect the liquid downwardly through the openings 43 to create a partial vacuum above the blade-disk, while the lower blades deflect the liquid downwardly to produce a similar partial vacuum below the plane of the blade.

In the modified construction of dasher illustrated in Fig. 5 the upper and lower series of blades 41^a and 42^a incline in a common direction or rearwardly from the plane of the blade-disk 40^a to deflect the liquid in opposite directions from the plane of the disk when the dasher is rotated in one direction or to respectively deflect the liquid through the openings 43^a when the dasher is rotated in the opposite direction. The upper and lower guard-disks 44^a and 45^a are constructed and arranged substantially as described in connection with the preferred form of dasher.

Fitted snugly in the receptacle above the plane of the dasher and having a central opening 47 through which the dasher-stem extends is a guard or splasher-plate 48, suitably supported, as by means of upwardly-extending hooks 49, engaged with the upper edge of the receptacle-wall. This guard or splasher-plate is arched toward its center to cause liquid finding its way to the upper surface thereof to flow back into the receptacle between its periphery and the inner surface of the wall of the receptacle, and in order that air admitted to the contents of the churn through the tubular stem may find its escape the guard or splasher-plate is provided near its center with a series of exhaust-ports 50. Depending from the under surface of the guard or splasher-plate is a series of cross-sectionally V-shaped deflectors 51, tapered in plan and disposed radially, the function of said deflectors being to cause the concentration of the whirling contents of the churn-receptacle toward the center, and thus prevent the forcing of the liquid unnecessarily to the upper surface of the guard or splasher-plate.

In the preferred construction the guard-disks 44 and 45 are detachably mounted upon the dasher-stem in contact with those edges

of the dasher blades or ears which are remote from the plane of the blade-disk and are held in place by means of split keys 52, engaged with transverse openings in the dasher-stem.

5 From the above description it will be seen that the parts of the apparatus may be readily adjusted to secure the desired frictional contact between the pulley and driving-wheel and that the communication of motion from
10 the driving member to the dasher is accomplished without the use of gears or belting, whereby the weight of the apparatus is reduced, and the communication of motion is accomplished with the minimum loss of energy by friction. Furthermore, it will be seen
15 that the parts may be readily assembled and that the same being detachable with equal facility may be thoroughly cleansed to maintain those parts which enter the contents of
20 the churn in a hygienic condition.

While I have shown and described friction-gearing for communicating motion from the drive-wheel to the dasher-spindle, it will be understood that I do not desire to be limited
25 strictly to this form of gearing, as others well known in the art may be substituted therefor, and that various other changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of
30 the advantages of this invention.

Having described my invention, what I claim is—

35 1. Churn-dasher-operating mechanism having a dasher-staff, a driving-wheel, a pulley in peripheral engagement with the rim of the driving-wheel, means connected with the shaft of the pulley for engagement with the dasher-staff, a pivotal bearing-bracket upon which
40 the shaft of the pulley is mounted, a laterally-contractible guide in which the bracket operates, and means for contracting the guide to clamp the bearing-bracket in its adjusted position, substantially as specified.

45 2. Churn-dasher-operating mechanism having a dasher-staff, a driving-wheel, a pulley in peripheral engagement with said driving-wheel, means connected with the shaft of the pulley for engagement with the dasher-staff,
50 an angularly-adjustable bearing-bracket upon which the shaft of the friction-pulley is mounted, a tension-spring connected with the bracket for moving the same to hold the pulley in engagement with the rim of the driving-wheel, and locking devices for securing
55 the bracket at the desired adjustment, substantially as specified.

3. Churn-dasher-operating mechanism having a driving-wheel provided with a friction-rim, a friction-pulley for peripheral contact
60 with said friction-rim, means connected with the shaft of the friction-pulley for engagement with a dasher-staff, a pivotal bearing-bracket upon which the shaft of the friction-pulley is
65 mounted, a laterally-contractible guide having cheeks between which said bracket op-

erates, and means for contracting the guide to clamp the bearing-bracket in its adjusted positions, substantially as specified.

4. Churn-dasher-operating mechanism having a driving-wheel provided with a friction-rim, a friction-pulley for peripheral contact with said friction-rim, means connected with the shaft of the friction-pulley for engagement with a dasher-staff, a pivotal bearing-bracket
70 upon which the shaft of the friction-pulley is mounted, a transversely-contractible guide in which the free end of said bracket is mounted, the same consisting of uprights having contiguous friction-faces for contact with opposite sides of the bearing-bracket, and a set-screw connecting said uprights, substantially
80 as specified.

5. Churn-dasher-operating mechanism having a driving-wheel provided with a friction-rim, a friction-pulley for peripheral contact with said friction-rim, means connected with the shaft of the friction-pulley for engagement with a dasher-staff, a pivotal angularly-adjustable bearing-bracket having bearings
85 in which the shaft of the friction-pulley is mounted, a tension-spring connected with the bracket for moving the same to hold the friction-pulley in contact with the rim of the driving-wheel, means for adjusting the tension of said spring, and locking devices for
90 securing the bracket at the desired adjustment substantially as specified.

6. Churn-dasher-operating mechanism having a driving-wheel provided with a friction-rim, a friction-pulley for peripheral contact with said friction-rim, means connected with the shaft of the friction-pulley for engagement with a dasher-staff, a pivotal bearing-bracket upon which the shaft of the friction-pulley is mounted, a plate-spring connected
100 at its free end with the bearing-bracket, a set-screw engaged with the spring to vary the tension thereof, and locking devices for securing the bracket at the desired adjustment
105 substantially as specified.

7. The combination with a churn-receptacle, of diametrically opposite seats on the wall of the receptacle, a bearing-bracket provided with downturned extremities fitted in said
110 seats, a swinging segmental-edged latch 7 mounted upon the bearing-bar near one end for engagement with notched ears 8 on one of the seats, a pivotal latch 10 mounted upon the bearing-bar at the other end for engagement
115 with a stud 11 projecting from the contiguous seat and through a slot in the bearing-bar, a driving-wheel mounted upon a stub-shaft carried by a pendent portion of one of the extremities of said bearing-bar,
120 and means for communicating motion from the driving-wheel to a dasher-staff, substantially as specified.

8. The combination with a churn-receptacle, a dasher, and dasher-operating mechanism, of a stationary guard or splasher-plate
125 arranged transversely in the receptacle, and

provided upon its under surface with deflectors having their sides inclined to vertical and horizontal planes, substantially as specified.

5 9. The combination with a churn-receptacle, a dasher, and dasher-operating mechanism, of a stationary guard or splasher-plate arranged transversely in the receptacle, and provided upon its under surface with radi-
10 ally-disposed cross-sectionally V-shaped deflectors tapered toward their inner ends, substantially as specified.

10 10. The combination with a churn-receptacle, a dasher, and dasher-operating mechanism, of a stationary guard or splasher-plate disposed transversely in the receptacle and provided on its under surface with depending
15 deflectors having inclined side surfaces, and suspending-hooks on the guard for engagement with the upper edge of the receptacle-
20 wall, substantially as specified.

11. The combination with a churn-receptacle, a dasher, and dasher-operating mechanism, of a stationary arched guard or splasher-
25 plate disposed transversely in the receptacle and provided on its under surface with bevel-sided concentrating deflectors, substantially as specified.

12. A rotary churn-dasher having a rotary
30 blade-disk provided with upstruck ears or blades inclining alternately upward and downward in opposite directions from the plane of the disk, and upper and lower guard-disks spaced from the plane of the blade-disk
35 and arranged in contact with those edges of said ears or blades which are remote from the blade-disk, all of said disks being carried by a tubular stem having an air-inlet port and provided contiguous to the plane of the

blade-disk with outlet-openings, substantially 40 as specified.

13. A rotary churn-dasher having a blade-disk provided with upstruck ears or blades deflected alternately upward and downward from the plane of the disk, an air-conveying 45 tubular stem carrying said blade-disk and provided contiguous to and above and below the plane thereof with outlet-ports, guard-disks arranged respectively above and below the plane of the blade-disk, in contact with 50 the free edges of said ears or blades, the outlet-ports of the stem being arranged between the plane of the blade-disk and the planes of the guard-disks, respectively, and keys engaged with the dasher-stem to secure said 55 guard-disks in place, substantially as specified.

14. The combination with a churn-receptacle, a dasher, and dasher-operating mechanism, of a circular series of pendent plane-sur- 60 faced deflectors, arranged within the churn-receptacle, and having their sides inclined to vertical and horizontal planes, substantially as specified.

15. The combination with a churn-recepta- 65 cle, a dasher, and dasher-operating mechanism, of a circular series of pendent, radially-disposed, cross-sectionally V-shaped deflectors tapered toward their inner ends, substantially as specified. 70

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN B. NEUENDORFF.

Witnesses:

MAX JUREZA,

E. R. LEAL.