No. 693,470. Patented Feb. 18, 1902.

G. A. WALKER.

ROTARY PUMP.

(Application filed Apr. 27, 1901.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

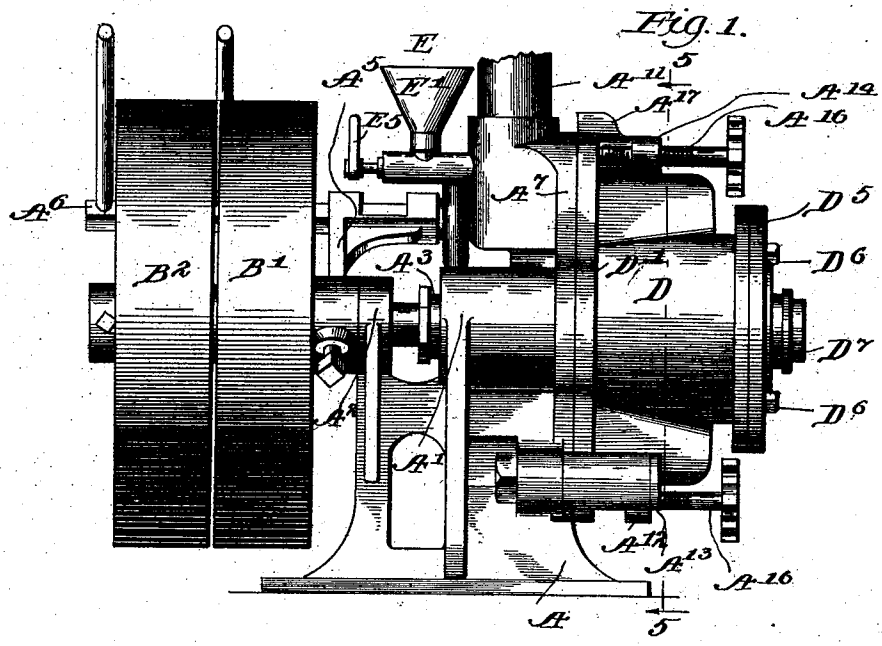
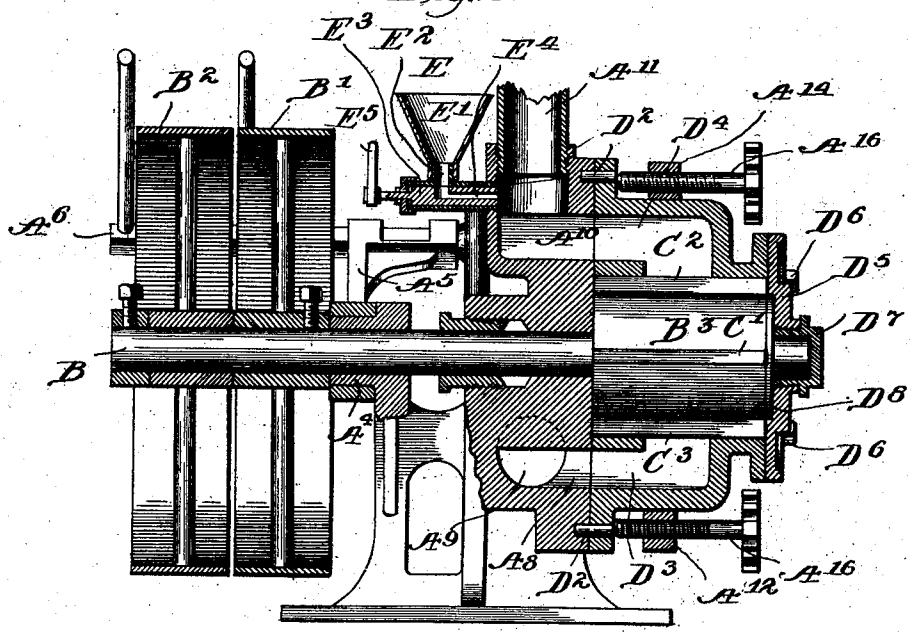


Fig. 2.



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Fig. 3.

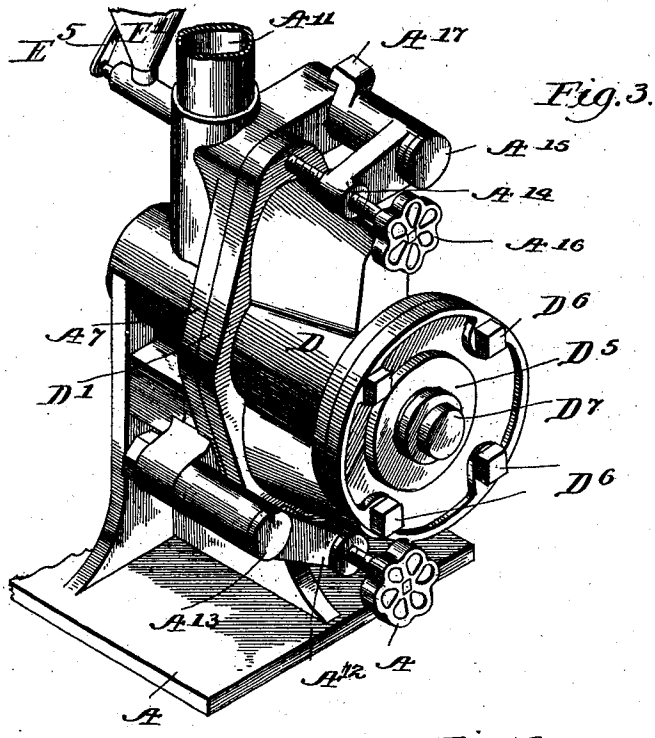
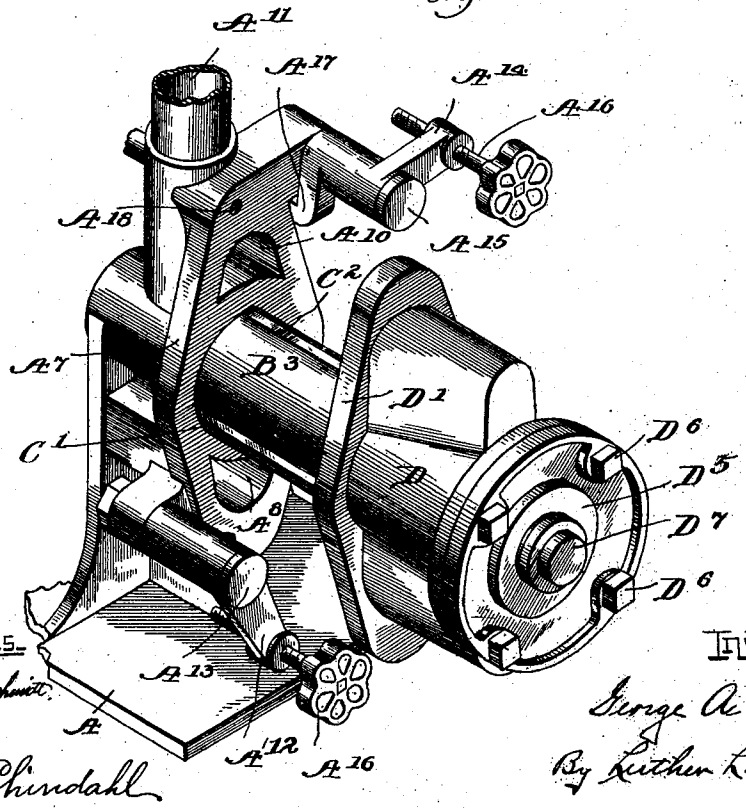


Fig. 4



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(Application filed Apr. 27, 1901.)

(No Model.) 3 Sheets—Sheet 3.

Fig 5.

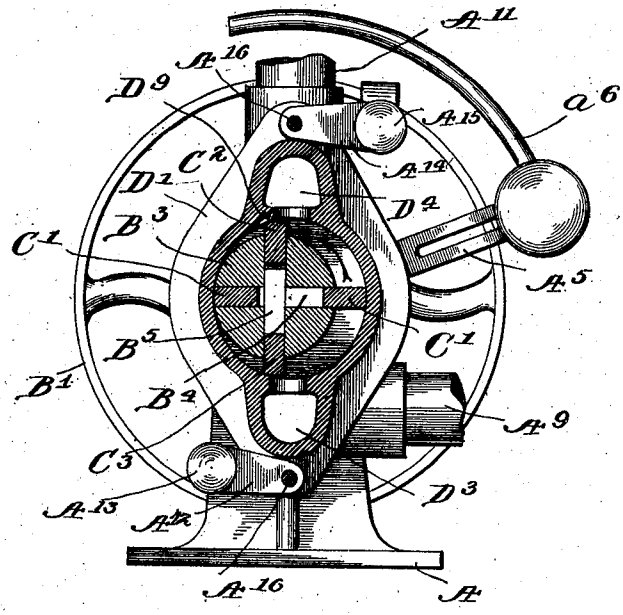
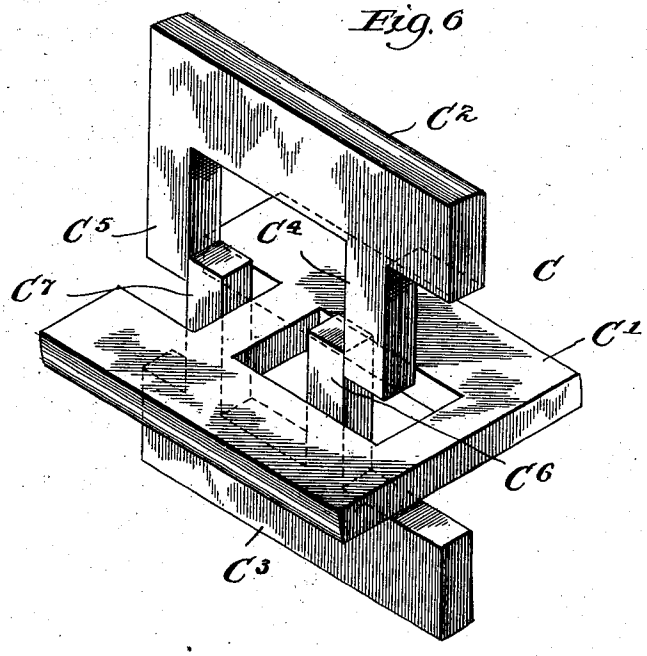


Fig. 6



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE A. WALKER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CREAMERY PACKAGE MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 693,470, dated February 18, 1902.

Application filed April 27, 1901. Serial No. 57,733. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. WALKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

The object of this invention is the production of an improved rotary pump.

In the accompanying drawings, Figure 1 is a side elevation of a rotary pump embodying the features of my invention. Fig. 2 is a longitudinal vertical central section through the pump. Fig. 3 is a fragmental perspective view of the cylinder end of the pump, showing the means for detachably securing the cylinder in position. Fig. 4 is a view similar to the preceding one, showing the means of attachment disengaged and the cylinder withdrawn from the rotary pump-head. Fig. 5 is a transverse section on dotted line 5 5 of Fig. 1. Fig. 6 is a perspective view of the vanes of the pump-head.

Like letters of reference indicate corresponding parts throughout the several views.

In the construction of this pump I provide a supporting-frame A, having the bearings A′ and A^2 for the pump-shaft. The bearing A′ is provided with a stuffing-box A^3 to prevent leakage from the pump-cylinder, and the bearing A^2 is formed with an extending sleeve A^4 for supporting the arm A^5 for the shipper-fork A^6. A face-plate A^7, integral with the supporting-frame A, is finished upon one side to receive the cylinder, to be later described herein. The outline of this face-plate is somewhat of lozenge shape, the bearing A′ being located a little to one side of its middle portion. Near the lower end of the lozenge-shaped plate A^7 is an intake-port A^8, communicating with the supply-pipe A^9, and near the upper part of said plate A^7 is the discharge-port A^{10}, communicating with the discharge-pipe A^{11}. An arm A^{12}, pivotally mounted upon the stud A^{13} at the lower side of said face-plate A^7, and a similar arm A^{14}, pivotally mounted upon the stud A^{15}, near the upper part of said face-plate, support the hand-screws A^{16}, threaded through openings in the outer ends of said arms, the purpose of these screws being to detachably secure the cylinder in place upon the face-plate A^7. The hub of the arm A^{14} is provided with a projection A^{17}, adapted to engage the adjacent portion of the supporting-frame A to limit the rotatory movement of said arm.

A^{18} represents depressions in the face-plate A^7, adapted to receive guide-pins (to be later described) in the cylinder for centering the latter with relation to the face-plate A^7.

B is a shaft rotatably supported in the bearings A′ and A^2 and provided with the usual tight and loose pulleys B′ and B^2, respectively. Near its opposite end the shaft B is provided with the cylindrical pump-head B^3, having diametric openings B^4 and B^5 extending through said pump-head substantially at right angles to each other. In these openings I place the two sliding vanes, to be next described. The end of the shaft B projects beyond the end of the pump-head B^3 and finds a bearing in a bearing-bushing in the head of the cylinder, to be later described.

C represents the two sliding vanes for the pump-head B^3. The vane C′ is formed in one piece and is adapted to lie in the opening B^5 of the pump-head B^3. The other vane is similar to the vane C′, excepting that it is formed in the two halves or parts C^2 and C^3. The part C^2 has the projecting fingers C^4 and C^5, and the part C^3 similar fingers C^6 and C^7, the latter pair being adapted to lie inside of the former and all to interlace, lying edge to edge. In the operation of the pump the two-part vane is matched together, as shown. It has the same movement as the sliding vane but is made in two parts in order that the vanes may readily be removed from the pump-head.

D is the pump-cylinder, having a bore considerably larger than the diameter of the pump-head. Its vertical diameter is a little greater than its horizontal diameter, it being slightly elliptical in order that the sliding vanes C may contact the sides of the cylinder. Its horizontal diameter therefore corresponds with the width of the vanes C. It has a plate D′, corresponding in outline to the face-plate A^7, with guide-pins D^2, adapted to enter the depressions A^{18} to hold the cylinder in its proper position relative to the pump-head B^3—that is to say, in a position

eccentric to the pump-head. At the lower part of the cylinder and opening to the interior thereof is a pocket D^3, communicating with the intake-port A^8, and at the opposite side of the cylinder, also communicating with the interior thereof, is the pocket D^4, coinciding with the discharge-port A^{10} in the supporting-frame A. The outer end of the cylinder D is closed by the cylinder-head D^5, formed integral with the cylinder or tightly fixed thereto in any suitable manner. In this case I have secured the head to the cylinder, employing the set-screws D^6 for that purpose. A bearing-bushing D^7 is screw-threaded in a suitable opening in the cylinder-head D^5, its position being concentric with the pump-head B^3 and its purpose to provide a removable bearing for the end of the rotatory shaft B. A recess D^8 on the inner face of the cylinder-head D^5, concentric with the bearing-bushing D^7, forms a bearing for the outer end of the pump-head B^3, and a pocket D^9, formed in the inner walls of the cylinder at the upper side thereof, provides an escape-port for the liquid remaining in the space between the pump-head B^3 and the cylinder after each vane passes the pocket D^4.

E represents a priming apparatus for supplying a small quantity of liquid to the pump upon starting the latter. E′ is the funnel of said primer; E^2, a pipe communicating with the interior of the funnel and the discharge-port D^4; E^3, a valve-plug seated in said pipe; E^4, a port formed in said plug, and E^5 a hand-lever for turning said valve-plug.

In operation the intake-port A^8 is connected with the supply and the discharge-port A^{10} connected as desired. Water is introduced into the cylinder to prime the pump, if that is desirable, by filling the funnel E′ and opening the valve-plug E^3. When the pump is started, the valve E^3 is closed. Power is communicated to the pump by means of a belt passing over the tight pulley B′, and the pump-head is thus rotated. The pump-head B^3 being eccentric to the cylinder D, the vanes C, extending through said diametric openings in said pump-head, will be slid backward and forward through said openings as the pump-head rotates. Liquid is drawn through the intake-port A^8, forced by said vanes through the crescent-shaped portion of the cylinder D not occupied by the pump-head B^3, and from thence outward through the discharge-port A^{10}.

Pumps embodying this invention are adapted for elevating milk and other perishable liquids, the handling of which necessitates a frequent and thorough cleansing of the pump and pipes.

I claim as my invention—

1. In a rotary pump, in combination, a supporting-frame having a face-plate with intake and discharge openings therein; a pump-cylinder having a face-plate with intake and discharge ports, which ports are adapted to coincide with the openings in the face-plate of said supporting-frame; a head for said cylinder; a bearing-bushing in said cylinder-head; a rotatable shaft journaled in said supporting-frame and in said bearing-bushing; a pump-head secured to said shaft, which pump-head comprises vanes slidably mounted in openings extending through said pump-head; and pivotal arms having screws for detachably securing the complete cylinder to said supporting-frame.

2. In a rotary pump, in combination, a supporting-frame having a face-plate with intake and discharge openings therein, which openings communicate with intake and discharge pipes; a rotatable pump-head journaled in said supporting-frame; a pump-cylinder; two pockets adjacent to said cylinder, and having communication with the interior thereof, one of said pockets also having communication with the intake-opening and the other with the discharge-opening in the supporting-frame; and means on the supporting-frame adapted to detachably secure the complete cylinder to said supporting-frame.

3. In a rotary pump, in combination, a supporting-frame having a face-plate with intake and discharge openings therein, which openings communicate with intake and discharge pipes; a rotatable pump-head journaled in said supporting-frame; a pump-cylinder having a face-plate adapted to lie in contact with the face-plate upon the supporting-frame; two pockets upon opposite sides of said cylinder, formed integral therewith and communicating with the interior thereof, one of said pockets also communicating with the intake-opening and the other pocket with the discharge-opening in the supporting-frame; and two arms pivotally mounted upon the supporting-frame adapted to hold the complete cylinder in engagement with the face-plate of the supporting-frame.

4. In a rotary pump, in combination, a supporting-frame having a face-plate with intake and discharge openings therein, which openings communicate with intake and discharge pipes secured to said supporting-frame; a shaft rotatably mounted in said supporting-frame and extending from said face-plate intermediate with the intake and discharge openings; a pump-head secured to said shaft; a pump-cylinder having a face-plate adapted to engage the face-plate of the supporting-frame; two pockets upon opposite sides of said cylinder, formed integral therewith and communicating with the interior thereof, one of said pockets also communicating with the intake-opening and the other with the discharge-opening in said supporting-frame; a head for said cylinder; a bearing-bushing in said cylinder-head for said shaft; and two arms pivotally secured to said supporting-frame, having hand-screws adapted to impinge upon the reverse side of said face-plate to hold said face-plate of the cylinder in firm contact with the face-plate of the supporting-frame.

5. In a rotary pump, in combination, a supporting-frame having a face-plate substantially lozenge shape, with intake and discharge openings near the extremities thereof, which openings communicate with intake and discharge pipes; a rotatable shaft journaled in said supporting-frame and projecting through an opening near the center of said face-plate; a pump-cylinder having a face-plate coinciding substantially with the face-plate of the supporting-frame; two pockets adjacent to said cylinder and formed integral therewith, which pockets have communication with the interior of the cylinder, one of said pockets also having communication with the intake-opening and the other pocket with the discharge-opening in the face-plate of the supporting-frame; guide-pins for holding said cylinder in position with relation to the face-plate of said supporting-frame; a head for said cylinder; a bearing-bushing in said cylinder-head; and two arms pivotally mounted upon the supporting-frame and having hand-screws for impinging upon the rear face of the face-plate of the cylinder for detachably securing said cylinder to said supporting-frame.

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