(No Model.)

W. J. CARTER.

BEER PUMP.

No. 262,740. Patented Aug. 15, 1882.

Fig. 1.

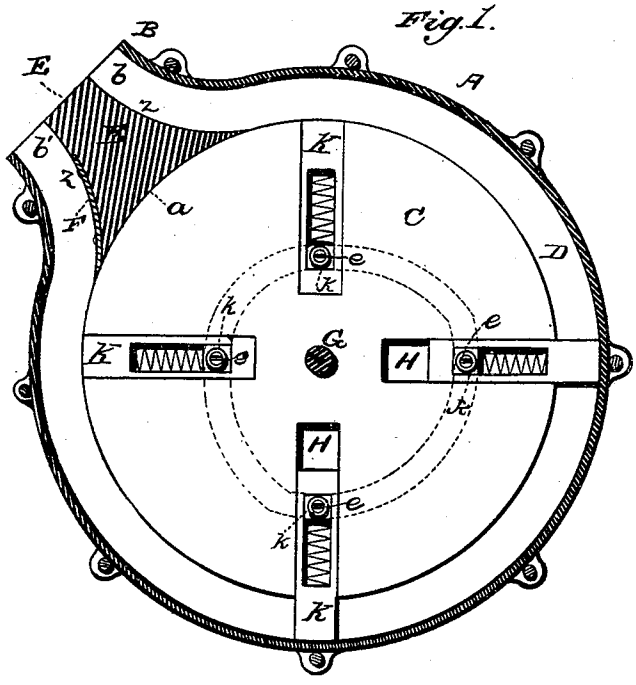


Fig. 2.

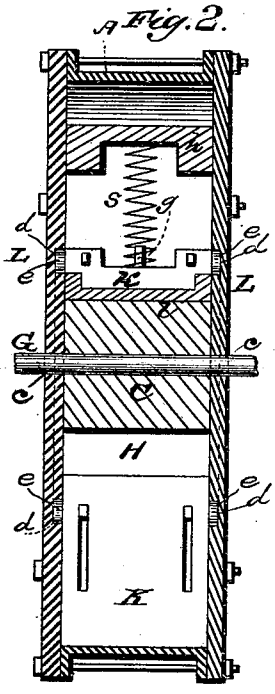
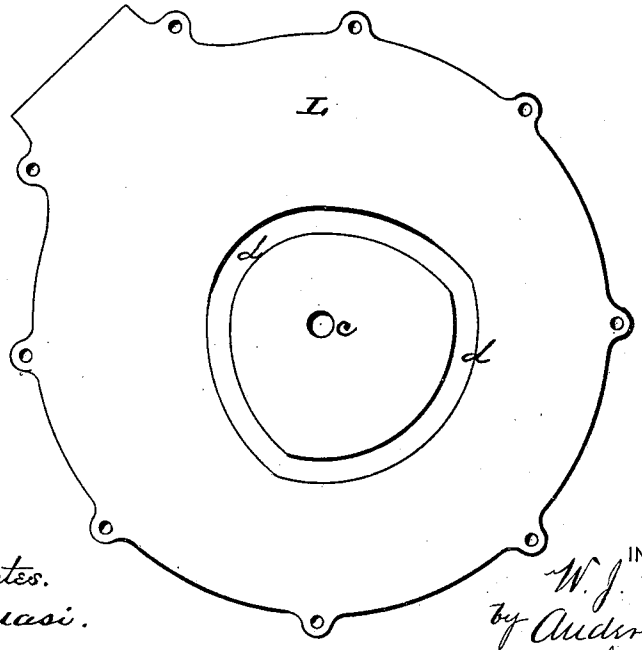


Fig. 3.



WITNESSES

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WILLIAM J. CARTER, OF LOUISVILLE, KENTUCKY.

BEER-PUMP.

SPECIFICATION forming part of Letters Patent No. 262,740, dated August 15, 1882.

Application filed May 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, WM. J. CARTER, a citizen of the United States, and a resident of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and valuable Improvement in Beer-Pumps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical sectional view of my pump. Fig. 2 is a cross-sectional view of the same, and Fig. 3 is a side view of one of the side plates.

The object of this invention is to provide a simple rotary pump which will operate to draw and force beer, mash, or any liquid matter of a thick, mushy, or coarse nature, and which will allow gravel or other extraneous hard substances often present in beer-mash, however abundant, to pass into, through, and out of the pump without obstruction or hinderance of any kind, except the ordinary friction of the flowing movement.

The invention has relation to beer-pumps; and it consists in the construction and novel arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, the letter A designates the cylindrical portion of the outer case, which is made as wide as the stream to be run through the pump. Its interior wall is circular, except at the neck portion B, where the walls gently slope toward each other, as indicated. Within this cylinder portion of the case is located concentrically the wheel C, which is equal in width to the circumscribing part A of the case, but is of less diameter, so that a uniform space or channel, D, is provided between the circular face of the wheel and the inner wall of the circumscribing portion A of the case, said channel extending entirely around the wheel, except at the neck portion of the case, where a tapering abutment, E, is introduced, having a circular concave inner face, *a*, which fits neatly against the broad rim-face of the wheel. This tapering abutment or dividing guide-piece E is equal in thickness to the width of the rim portion A of the case. Its shelving walls *z* are parallel to the walls of the neck portion B of the case, and terminate tangentially to the face of the wheel on each side of the neck portion, so that the inlet and outlet passages *b* and *b'* of the neck are of like form and equal sectional area to the channel D around the wheel. The stream passes from a supply-pipe into the pump through the neck passage *b*, around the wheel, through the passage D, and out of the pump through the neck-passage *b'* into the delivery-pipe. At the inner termination of the wall of the abutment or dividing-guide in the outlet-passage *b'* of the neck is placed a metallic scraper, F, the edge of which is equal in breadth to the rim or face of the wheel, and which is designed to clean said rim or face as the wheel turns. The neck-passages *b* and *b'* and the passage D around the wheel form a channel of uniform size and sectional form in all its parts, through which anything that can enter the pump can pass without obstruction, save the ordinary friction of flowing.

The wheel C is rigidly secured to its shaft G. Its sides are flat and parallel near its rim-face, and are truly at right angles to the axis of the wheel. In the wheel, at four points at equal distances from each other, are formed radial slots or ways H, in each of which is arranged a sliding head or piston, K. The slot or way H is deep enough to receive the entire piston without projection of the end thereof, and of proper breadth to fit neatly against the faces of the pistons, but allowing them to slide in the slots or ways without leakage or lost motion.

L L indicate the sides of the case, to which the circumferential portion A and the abutment E are secured by means of bolts. Each of these sides L is formed with a central bearing, *c*, for the shaft of the wheel, and with an eccentric groove, *d*, around said bearing in its inner wall. On the side of the bearing *c*, and nearest the neck portion B, the groove *d* is carried nearer the bearing *c* than it is in other parts, as shown in the drawings, its shape being such as to describe the curve of movement of the pistons, which are, in fact, governed by this groove. The pistons are provided with laterally-projecting pins or studs *e*, which engage

the side grooves, *d*, and as the wheel turns the pistons are retracted to pass the abutment between the neck-passages and pushed out to work in the circular channel D. In the latter operation the pistons press against the inner wall of the case-rim A and effect, as the wheel turns, a strong suction, drawing the mash after them, as well as forcing it before them, around the channel D and out of the delivery-passage in the neck. The position of the ways and the shape of the eccentric grooves are such that one piston is held to its work until the next in succession relieves it.

In order that the piston shall have a sufficiently positive motion, and yet be of yielding character to avoid injury from the casual engagement with hard substances which are apt to get in pumps of this kind, the piston is made of several parts—to wit, the slotted slide-head *h* and the transverse governing-bar *k*, carrying the spring-guide *g*, on which is the spiral spring *s* and the lateral studs or pins *e*, which engage the eccentric grooves of the case-wall. The transverse bar *k* passes through the slot of the head, and is kept normally against the inner end, *l*, of the head by the action of the spring, so that under ordinary circumstances, while liquor of common character is passing, the pistons work as if they were solid; but in the event of the introduction of hard substances into the channel of the pump and the engagement therewith of the working piston its head will yield under the obstruction, while its governing-bar *k* will nevertheless perform its positive and proper movement, guided by the eccentric grooves. As soon, however, as the head is released from engagement with the obstruction the spring will cause it to assume its proper position relative to the governing-bar *k*.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. In a rotary beer-pump, the tapering abutment E between the inlet and outlet passages, and having the scraper F, bearing on the rim-face of the wheel at the inner termination of the outlet-passage, substantially as specified.

2. A rotary beer-pump having the circumferential passage D, outlet and inlet passages *b'* and *b*, eccentric grooves *d* in the side walls, radially-slotted piston-wheel C, and yielding slide-piston K in the piston-wheel engaging the eccentric grooves, substantially as specified.

3. In a rotary beer-pump, the combination, with the radially-slotted wheel C and the eccentric grooves *d*, of the slotted pistons K, their movable transverse bearings *k*, engaging the eccentric grooves, and their spring-bearings *s* between said transverse bearings and the ends of the pistons, substantially as specified.

4. The rotary beer-pump consisting of the case-rim A, having neck B, the tapering abutment E, scraper F, the eccentrically-grooved side walls, L, radially-slotted piston-wheel C, slotted pistons K, transverse bearings *k* therein, and springs *s*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM JOHN CARTER.

Witnesses:
W. I. CLEMERSON,
WM. W. TUYMAN.