No. 749,836. PATENTED JAN. 19, 1904.

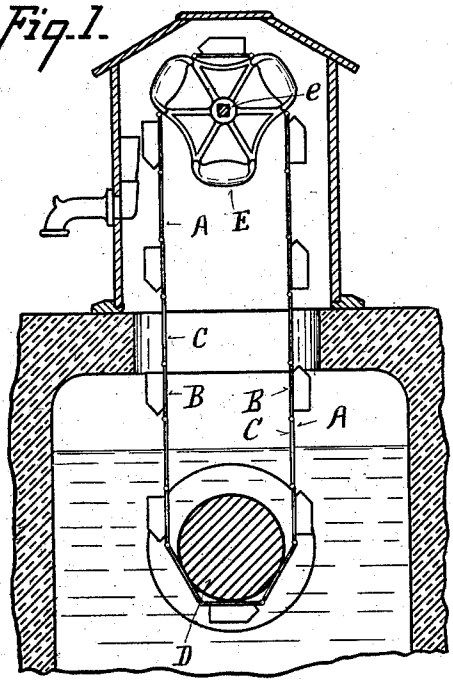
L. A. BRIGEL, JR.

BUCKET PUMP.

APPLICATION FILED JAN. 9, 1903.

NO MODEL.

Fig. 1.



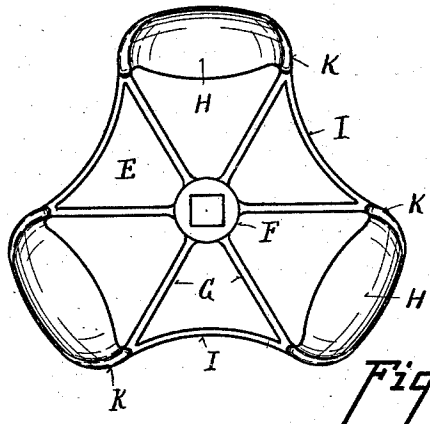


Fig. 2.

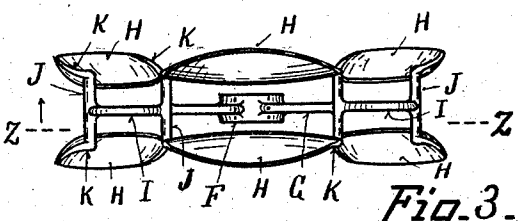


Fig. 3.

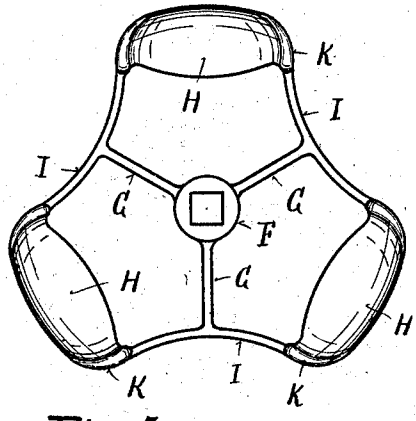


Fig. 5.

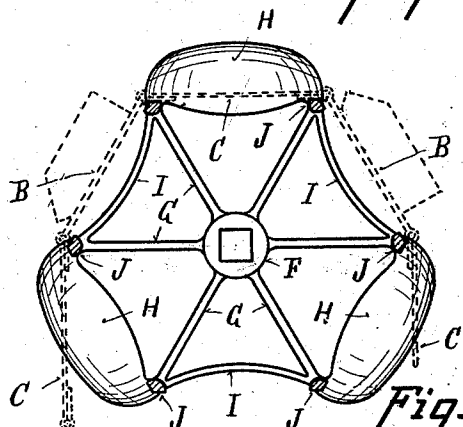


Fig. 4.

Inventor

Leo A. Brigel Jr.

By C. W. Miles

Attorney.

Witnesses

J. U. Sayre

Jos. J. DeRose

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 749,836. Patented January 19, 1904.

UNITED STATES PATENT OFFICE.

LEO A. BRIGEL, JR., OF CINCINNATI, OHIO.

BUCKET-PUMP.

SPECIFICATION forming part of Letters Patent No. 749,836, dated January 19, 1904.

Application filed January 9, 1903. Serial No. 138,329. (No model.)

To all whom it may concern:

Be it known that I, LEO A. BRIGEL, JR., a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Bucket-Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in bucket-pumps.

One of its objects is to provide a bucket-pump which can be used with narrow wells or cisterns having small openings and which will at the same time work satisfactorily and reliably under the varying conditions of weather, location, position, and treatment received.

Another object is to provide an improved top wheel to assist in attaining these several advantages and which shall at the same time be light, strong, not interfered with by ice, and not influenced by irregular setting of the pump.

It also consists in certain details of form, combination, and arrangement, all of which will be more fully set forth in the description of the accompanying drawings, in which—

Figure 1 is a sectional diagram of my improved pump. Fig. 2 is a side elevation of the top wheel. Fig. 3 is a top plan view of Fig. 2. Fig. 4 is a section on line *z z* of Fig. 3. Fig. 5 is a view similar to Fig. 2, showing a modification.

In pumps of this class heretofore it has been found impractical to operate top wheels having less than eight faces, due to a variety of causes, among which is a tendency of the chain to climb out of its proper position on the wheel, particularly if not set plumb on the curb, also due to the effect of ice in cold weather aggravating this tendency, also to the improper, irregular, or too-rapid turning of the wheel. It is found in practice that the manufacturer is required to provide a pump which will work well under all these adverse conditions, and in order to meet these requirements it has been necessary heretofore to provide a large top wheel, and where narrow wells were encountered a small lower wheel was resorted to as a partial remedy. This, however, entailed an uneven or irregular action, due to the difference in size between the wheels and the different speeds at which they revolved, which also tends to make the chain climb.

By proper shaping and proportioning the top wheel I am enabled to provide a wheel having only six standard faces, which has little, if any, tendency for the chain to climb, which is not affected by accumulated ice, which will work satisfactorily even when the pump is not set plumb on the curb, and which, due to its small diameter, is particularly adapted to narrow and deep wells and to cisterns having small openings and with which bucket-pumps could not be heretofore satisfactorily employed.

In Fig. 1 of the drawings I have shown a pump embodying my improvements, in which A represents the chain formed alternately of bucket-links B and the flat sheet-metal links C, which are of ordinary construction. D represents the bottom wheel, and E the top wheel, which is turned by means of a crank-shaft *e*. The top wheel E is formed of the hub F, the spokes G, the wings or blades H, and the curved connecting-bars I. The blades are connected to each other and to the spokes by means of cross-bars J. The chain is guided and prevented from climbing by the engagement of the links C with the blades H, and these blades are carefully and smoothly curved in a radial and also in a circumferential direction, as indicated in Figs. 2, 3, and 4, so as to engage and smoothly and unfailingly guide the flat links to their proper position on the wheel, so that they will rest centrally between the blades with their ends resting on the cross-bars J. The form of the blades is such that any ice which may accumulate on them will be cut or scraped away by the flat links without affecting the operation of the pump, and in case the pump is not set plumb or the pump is turned irregularly or too fast they will still guide the links to their places. The bars I are curved so as not to contact with the bucket-links, so that no wear of the bucket-links will occur and so that any ice which may accumu-

late on them will not affect the operation of the pump. In order to strengthen and firmly support the blades, I provide the ribs K, running from the ends of the cross-bars J along the outer edges of the blades. By reducing the size of the top wheel the load is brought nearer the shaft, and the pump is more easily operated, which is particularly important in deep wells.

In Fig. 5 I have shown a modification in which a less number of spokes are employed, which are attached centrally to the bars I, and thereby forms a particularly light and at the same time strong wheel. By employing either of the above top wheels I am enabled to use a smaller pump-box.

Having described my invention, what I claim is—

1. In a bucket-pump, the combination with a chain having alternate buckets and flat links, of a top wheel comprising spaced pairs of blades oppositely disposed one to the other, said blades being circumferentially curved and having their oppositely-disposed faces extending outwardly in radial convex curves, cross-bars connecting each of said pairs of blades secured at the base of the radial curved portions thereof, and concave bars arranged between and connecting the blades of each of the pairs, substantially as set forth.

2. In combination with a bucket-pump and chain composed of alternate flat links and buckets, a top wheel provided with a plurality of oppositely-disposed blades arranged in pairs upon said wheel, said blades being curved in the direction of their length and having radial convex curves upon their oppositely-disposed faces, cross-bars connecting the blades of each pair and arranged at the base of the radial curved portions thereof, outwardly-curved reinforcing-ribs secured to the end blades and to said cross-bars, and concave bars connecting each of the blades of the several pairs whereby contact of the chain-links therewith is prevented, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

LEO A. BRIGEL, JR.

Witnesses:
J. V. SAYRE,
C. W. MILES.