(No Model.) 2 Sheets—Sheet 1.

# E. CHAQUETTE.

## ROTARY PUMP FOR DREDGING APPARATUS.

No. 523,961. Patented July 31, 1894.

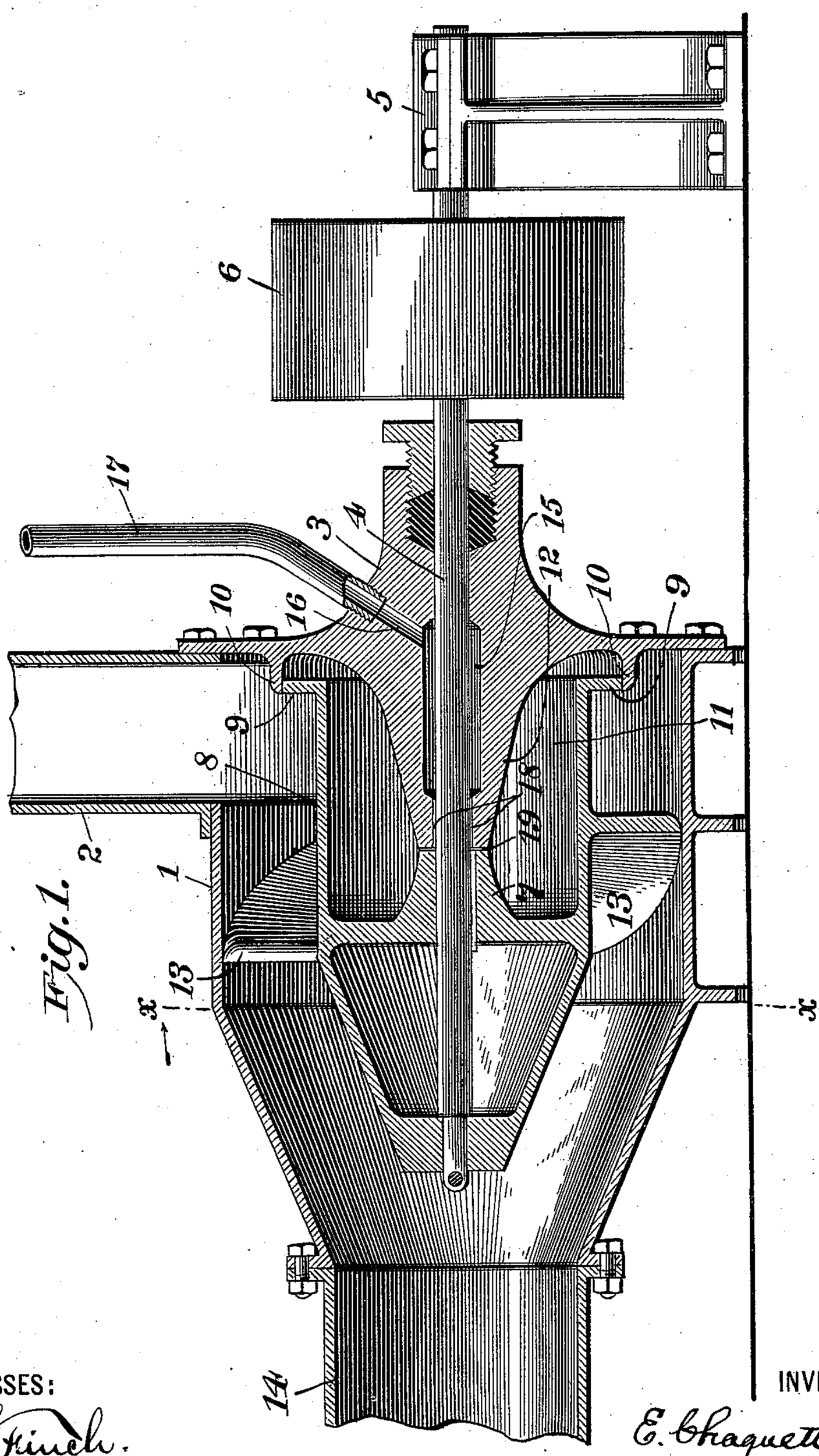


Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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## ROTARY PUMP FOR DREDGING APPARATUS.

No. 523,961. Patented July 31, 1894.

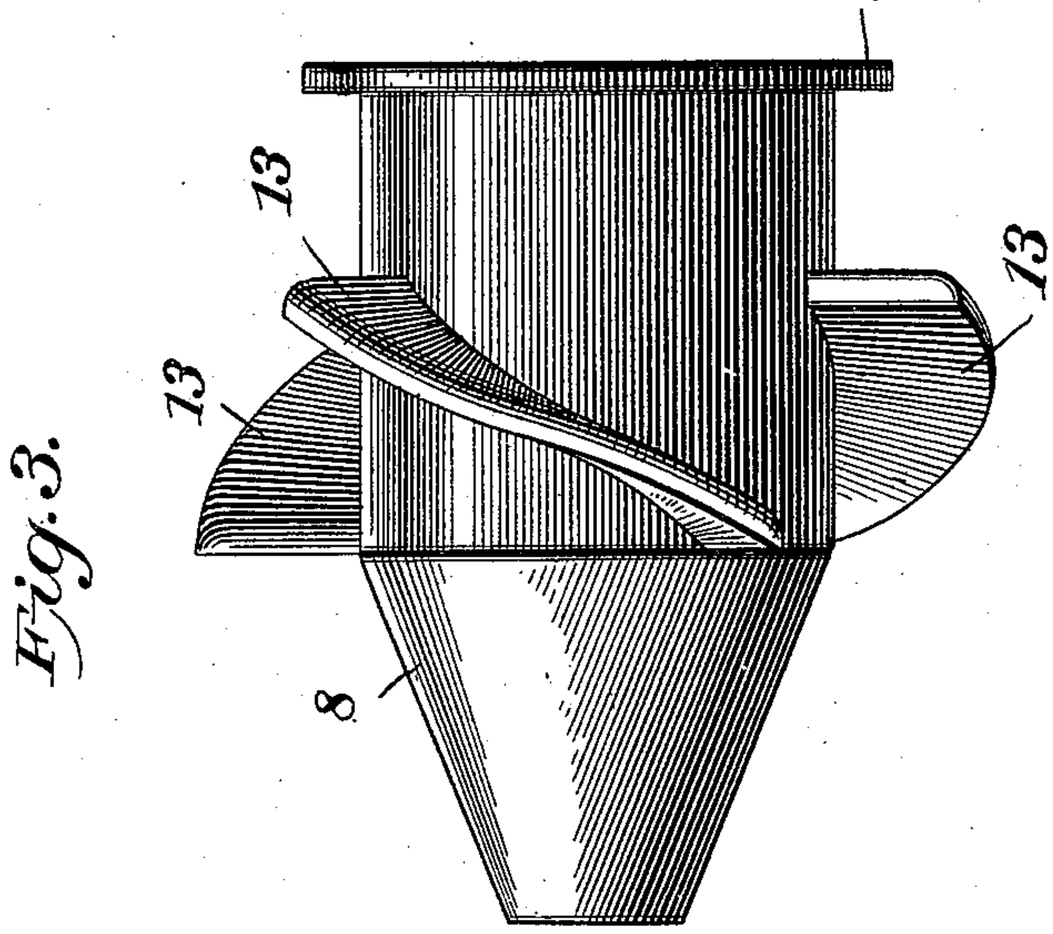


Fig. 3.

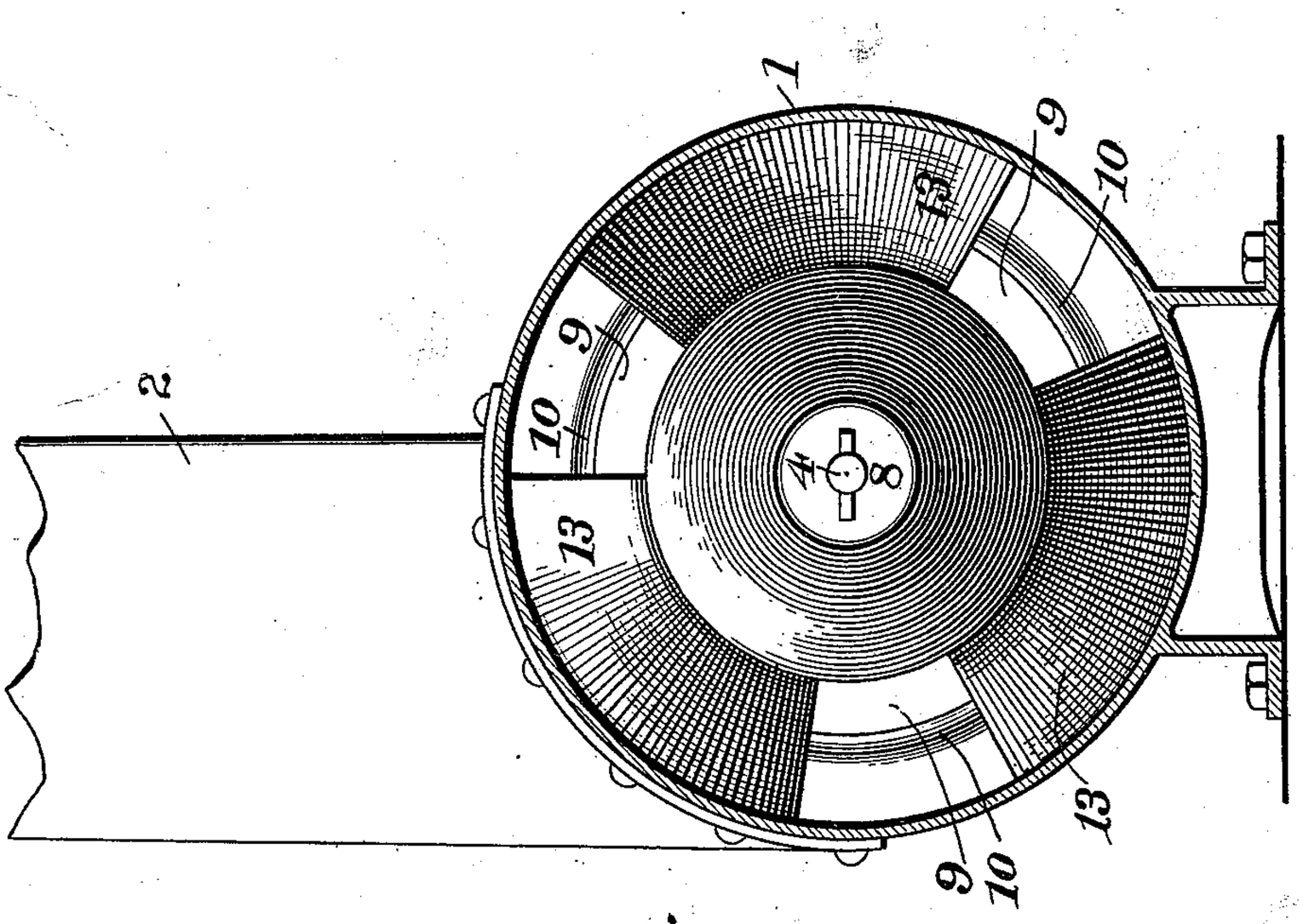


Fig. 2.

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# UNITED STATES PATENT OFFICE.

EPHRAIEM CHAQUETTE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE CHAQUETTE CANAL AND HARBOR DREDGING COMPANY, OF SAME PLACE.

## ROTARY PUMP FOR DREDGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 523,961, dated July 31, 1894.

Application filed February 1, 1894. Serial No. 498,776. (No model.)

*To all whom it may concern:*

Be it known that I, EPHRAIEM CHAQUETTE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Rotary Force-Pumps for Dredging Apparatus; 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 dredging apparatus, but more particularly to a rotary force pump for the double purpose of leading and forcing the dredgings into and through a pipe conduit.

Heretofore it has been common, in connection with a dredging apparatus, to use rotary force pumps for the purpose of drawing the dredgings into and forcing them through a line of pipe, but such pumps have been of the kind known as "centrifugal pumps" in which the dredgings have been drawn into the center of a revolving "runner" and then thrown out radially into the pipe beyond. This style of pump last referred to requires great speed to be effective, and it is not an economical device in that the actual amount of power lost is very great, and moreover such pump becomes readily clogged. My present invention does not contemplate this style of pump, and my improved pump is far more powerful and economical than any pump which has hitherto been used in connection with dredging apparatus, and it is impossible for it to become clogged.

Referring to the accompanying drawings which form a part of this specification, Figure 1, is a sectional elevation of my improved pump; Fig. 2, a section at the line *x*, *x*, of Fig. 1, and Fig. 3, a detail elevation of the rotary hollow drum.

Similar numbers of reference denote like parts in the several figures of the drawings.

1 is a cylindrical casing into which a funnel 2 leads from the devices for delivering the dredgings.

I have not shown any part of the dredging apparatus since the same has nothing to do with my present invention, and for the purpose of the latter it would be sufficient merely to state that the dredgings are delivered directly into the funnel 2 in any well known and ordinary manner.

3 is a journal box rigidly secured to the rear of the casing so as to entirely inclose the same, and 4 is a shaft journaled within said box and also within an ordinary journal box 5 in the rear of the first named box. 6 is a pulley mounted on said shaft and to which any suitable belt (not shown) is attached for the purpose of revolving the shaft. The shaft projects beyond the inner end of the box 4, and around this projecting part is rigidly secured the hub 7 of the hollow drum 8. Extending laterally from the rear of this drum is a circumferential circular flange 9 which is journaled within an annular box 10 which extends inward from the box 3 within the casing. The body of the drum 8 is hollow as seen at 11, and into this hollow body a central hub 12 from the box 3 projects so as to afford an extended bearing for the shaft 4. Projecting from the outer surface of the drum 8 are spirally disposed wings 13 leading forward toward the nose of the drum. In the drawings I have shown three of these wings as this number is sufficient for the purposes of my invention, but it is evident that the number of such wings may be increased without departing from the spirit of my invention.

The body of the drum is immediately below the funnel 2 and the dredgings drop through the latter directly upon said body, and as they fill up the space within the casing of the pump so as to come within the field of operation of the wings 13, as the latter in their revolution will seize upon such dredgings and will draw them forward into the front part of the casing, and will thence force them continually into and through the pipe conduit 14 which leads from the casing.

It will be observed that the nose of the drum is of a conical shape and the same is true of the forward part of the casing, and this is for the purpose of getting the full benefit of the forcing action of the wings, which could not be obtained were the nose cut off short at or about the point denoted by the section line *x*, *x*, in Fig. 1. The speed at which this pump is run rarely exceeds one hundred revolutions a minute as against from

four hundred to five hundred revolutions of the ordinary centrifugal pump, and it will thus be seen that the power which is actually lost in my improvement is reduced to a minimum.

A very important feature of my invention resides in the manner in which I keep the journal boxes free from all grit or foreign substances such as would otherwise tend to retard the rotary movements and to cut out the bearings, and I will now describe this.

Within the box 3 is a recess or chamber 15 which surrounds the shaft 4, and into this recess leads a port 16 through the box, with which port communicates any suitable pipe 17 through which water is constantly introduced. A duct 18 leads from the recess 15 along the shaft 4 into a duct 19 which latter is between the abutting faces of the hubs 7 and 12, and communicates with the surrounding space 11. It will thus be seen that when the drum revolves, the space 11 will after a while become filled with water, which latter will not only continually wash the abutting faces of the two hubs, but will also freely lubricate the bearings 10 so that no grit or foreign substance can clog the same.

The water introduced through the pipe 17 is not under pressure but such pipe simply leads from any suitable reservoir. In fact, the main difficulty experienced hitherto in the lubrication of bearings of this sort, has been that the water must be introduced at a pressure greater than that of the surrounding material which is being forced through the pump, but my present invention provides a body of water around the parts liable to become clogged, and as the drum revolves the water is constantly agitated and thoroughly washed within the bearings, there being no pressure whatsoever upon the water.

The extension of the wings 13 to the casing aids materially in concentrating the force exerted by the action of the wings so that there can be no back pressure of the dredgings.

The central hub of the box 3 extends far enough within the hollow drum so that the latter is properly balanced on the shaft, thus contributing greatly to the facility with which my improvement is operated.

I do not wish to be understood as claiming broadly the lubrication by water of the bearings of a pump of this description, since I am aware that this is a very common expedient; but, in this respect, my invention resides in the idea of introducing water around the shaft bearing into the hollow chamber 11 which surrounds the bearings of the drum, in order to preserve a body of water in constant agitation against said bearings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the cylindrical casing, the journal box secured to the rear end thereof and having projecting from its inner wall an annular bearing, the shaft journaled within said box and projecting from the forward end thereof, the hollow drum having an interior central hub rigidly mounted on said projecting end of the shaft and having at its rear end a circumferential flange which is journaled within the inner bearing of the journal box, and the spirally inclined wings extending from the circumference of said drum and conforming closely at their extremities to the inner wall of the casing, substantially as set forth.

2. The combination of the cylindrical casing, the journal box secured to the rear thereof and having projecting from its inner face an annular bearing and with its central portion extending inwardly to form a hub, the shaft journaled within said box and projecting beyond said hub, the hollow drum inclosing said hub and having an interior hub which is rigidly mounted on said projecting part of the shaft in close proximity to the hub of the journal box, and provided at its inner end with a circumferential flange which is journaled within said annular bearing, and the spirally inclined wings extending from the circumference of said drum to the inner wall of said casing, substantially as set forth.

3. The combination of the cylindrical casing, the journal box secured to the rear end of said casing and having projecting from its inner face an annular bearing and a central hub, the hollow drum having at its rear end a circumferential flange journaled within said bearing and provided at its central portion with a hub which abuts against the end of the hub of the journal box, both of said hubs extending within the hollow drum, the shaft journaled within said box and secured to said drum through the hub thereof, and lubricating channels for water leading within said box along the shaft and between the abutting faces of said hubs into the hollow drum, whereby the latter is kept full of water, substantially as set forth.

4. The combination of the cylindrical casing, the journal box secured to the rear end thereof and having projecting from its inner face an annular bearing and a central hub, the shaft journaled within said box and projecting beyond said hub, the hollow drum having a central interior hub secured to the projecting end of the shaft and abutting against the hub of the journal box, and said drum also provided at its rear end with a circumferential flange journaled within the said annular bearing, means for revolving said drum, and means for constantly supplying water to the interior of said drum whereby the bearings will be constantly washed as the drum revolves, substantially as set forth.

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

EPHRAIEM CHAQUETTE.

Witnesses:
J. S. HINCH,
F. W. SMITH, Jr.