

No. 680,722.

Patented Aug. 20, 1901.

M. MAURAN.
ROTARY PUMP.

(Application filed July 21, 1900.)

(No Model.)

2 Sheets—Sheet 1.

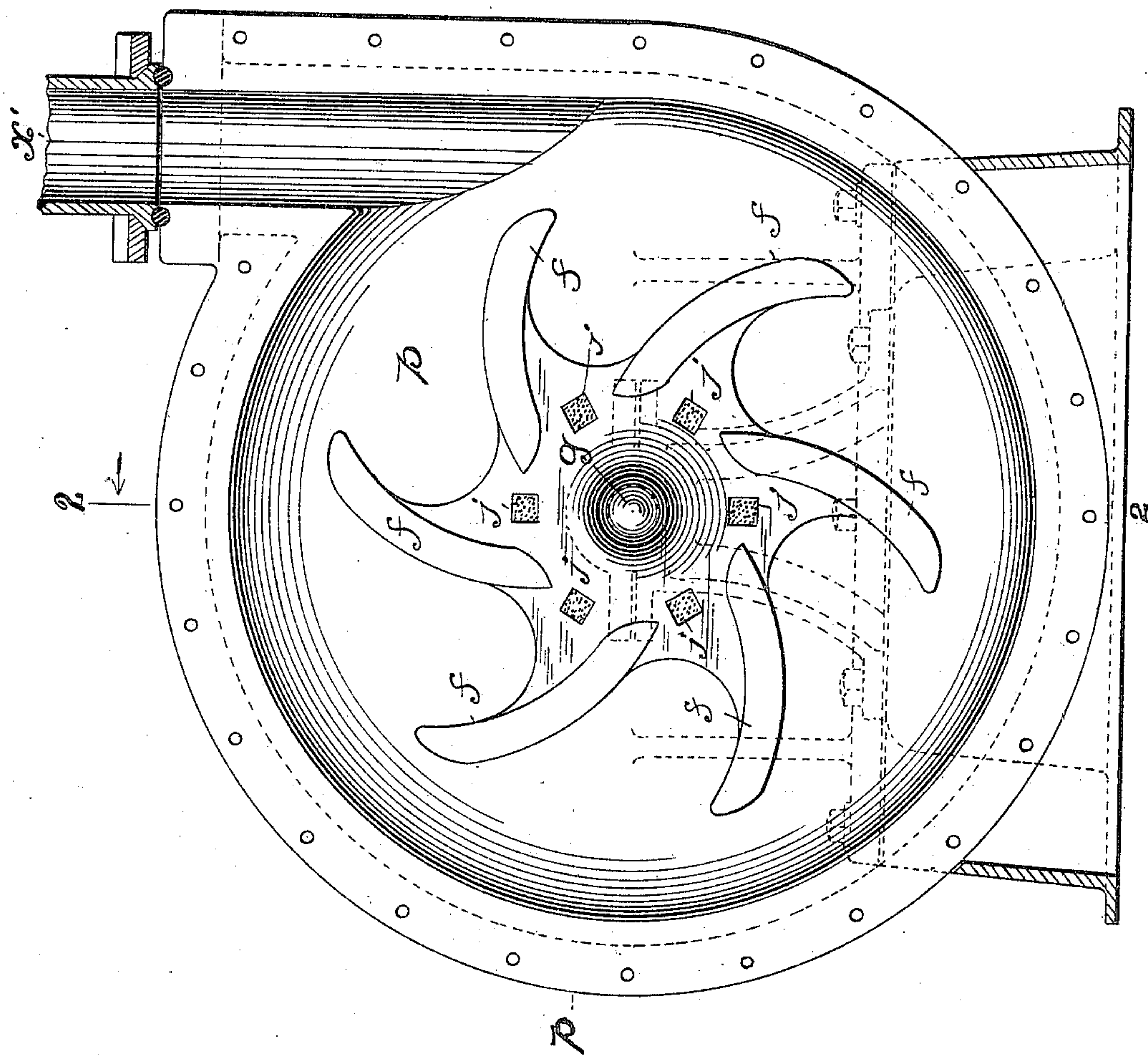


Fig. 1.

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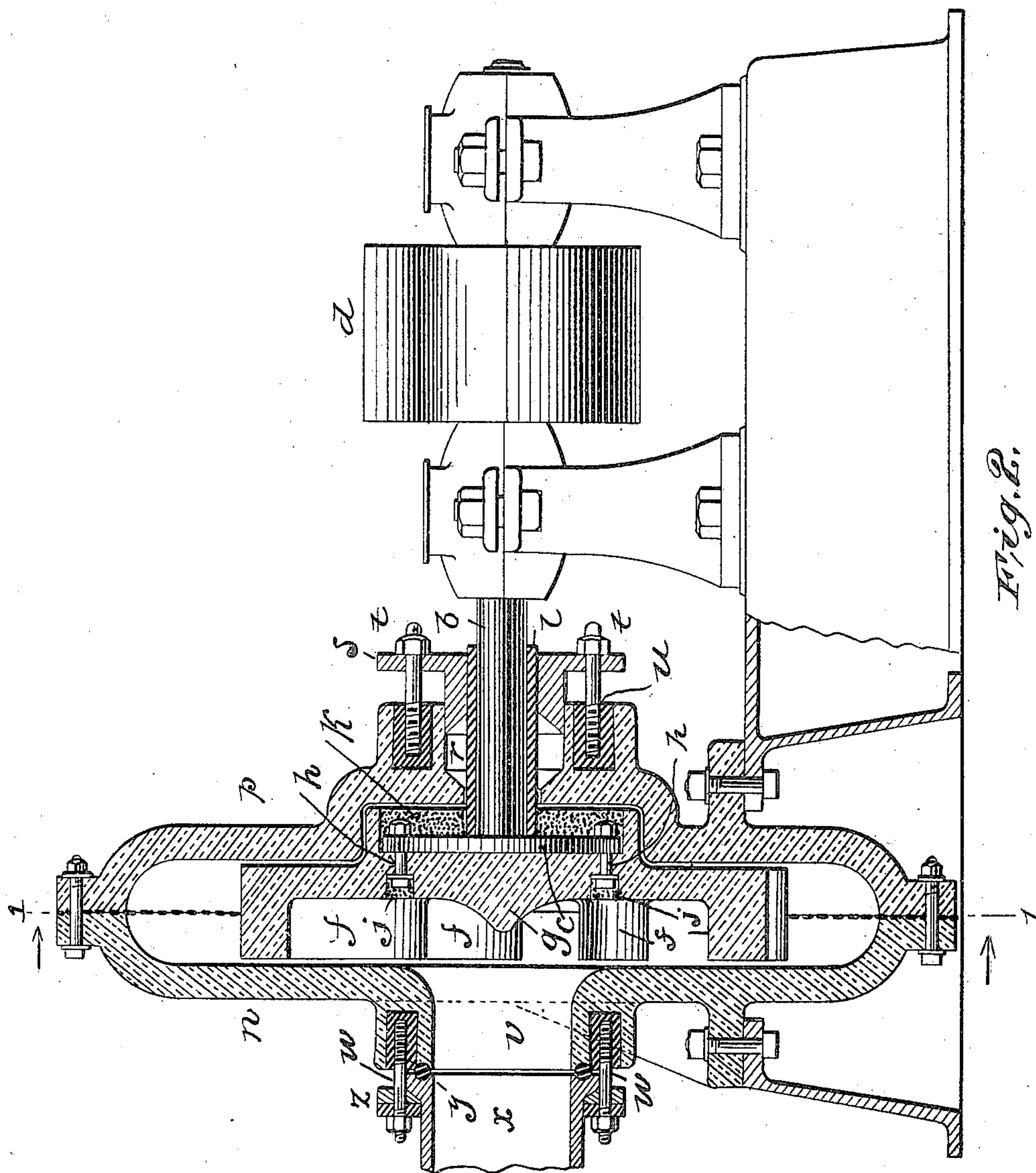
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UNITED STATES PATENT OFFICE.

MAX MAURAN, OF NIAGARA FALLS, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CASTNER ELECTROLYTIC ALKALI COMPANY, OF VIRGINIA.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 680,722, dated August 20, 1901.

Application filed July 21, 1900. Serial No. 24,362. (No model.)

To all whom it may concern:

Be it known that I, MAX MAURAN, mechanical engineer, post-office address and residence Niagara Falls, New York, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification with illustrative drawings.

The invention is primarily designed for rotary pumps for pumping strong alkaline solutions, acid solutions, and other corrosive liquids. The difficulty to be overcome has been to construct a rotary pump which shall combine the non-corrodible qualities with satisfactory simplicity, durability, and efficiency of the parts.

The nature of the invention will be best understood by the accompanying drawings, which illustrate one preferred form.

Figure 1 is an end view of the pump apparatus with one half or section of the casing removed to show the interior construction. Fig. 2 is a side elevation showing the casing, the pump-wings, and certain other parts in section on the imaginary plane 2 2 of Fig. 1.

The rotary part of the pump consists, preferably, of a shaft *b*, provided with a disk or head *c* within the casing of the pump, and a driving-pulley *d*. The wings *f* or vanes of the pump are preferably of earthenware and formed in one single piece with the central supporting-disk *g*, which is recessed and fits over the disk or head *c* of the shaft *b*. Bolts *h* secure the wings to the disk *c*. The bolt-heads may lie in recesses in the earthenware pump-wings, as shown, and be covered and protected by a non-corrodible cement *j*. The other ends of the bolts and the entire rear surface of the disk *c* are covered or embedded in a layer of the non-corrodible cement *k*. To protect the shaft *b* where it projects through the packing-box of the pump, a sleeve *l*, of a suitably hard non-corrodible material—such, for example, as the well-known compounds of rubber and asbestos that are sometimes used for electrical insulating material and for battery-cells—is provided. This sleeve *l* extends into and is embedded in the layer of cement *k*.

The pump-casing may consist of sections, preferably two, *np*, made of earthenware and

bolted together and having the joint or union between them suitably luted or sealed. The casing is provided with the usual peripheral or tangential discharge-opening. The section *p* has a central opening to receive the shaft and is provided with a packing-box *r* and adjustable packing sleeve or follower *s*, secured and adjusted by bolts *t*. Instead of fastening the bolts *t* directly in the earthenware and endangering the breakage of the earthenware plugs or bushings *u*, of lead or other relatively soft material, are cast and secured in recesses, as shown in the casing, and the bolts *t* embedded or secured in these bushings. The section *n* of the pump-casing has the central inlet-opening *v*, around which are secured bolts *w* by means of lead bushings, similarly to the bolts *t*. A tight joint between the inlet-pipe *x* and the earthenware may be secured by interposing a packing-ring *y* and drawing up the pipe *x* by means of the bolts *w*, so as to compress the packing-ring *y* and form a tight joint without danger of breaking the earthenware. The pipe *x* is shown flanged at its end and surrounded by collars *z*, upon which the bolts *w* act, as set forth in my other application, filed March 22, 1900, Serial No. 9,681. The present invention is not limited to such form of attaching the bolts *w* to the pipes *x*. The discharge-pipe *x'* may be secured in the same manner, the details of which are not repeated in the drawings.

The pipe-casing is preferably secured to the same bed or base that carries the bearings for the shaft *b*.

After the parts have been assembled and adjusted the vanes turn freely within the casing without touching, though of course a close fit is desirable. The solution or liquid to be pumped flows in through the pipe *x* and inlet *v* and is discharged by the wings peripherally to the pipe *x'*. The only point of contact and wear between the rotary parts and the casing is the sleeve *r*, which is surrounded by the packing in the packing-box. The packing material is omitted from the box in the figures for the sake of more clearly illustrating the construction. The wear upon the sleeve *r* is very slight. All the rotary

parts that are within the casing inside of the packing-box expose only non-corrodible materials to the action of the liquid, for the shaft *b*, the disk *c*, and the metal parts by which the wings are secured to the disk are all completely incased and protected, as described.

The characteristic and patentable features which I claim as new, and desire to secure by these Letters Patent, are the following:

1. In a rotary non-corrodible pump and for the purposes explained, the combination of an earthenware chamber consisting of detachable sections, a rotary shaft entering the said chamber and provided with an enlarged end or head, a non-corrodible sleeve carried by the shaft, a packing device surrounding the said sleeve, an earthenware disk provided with wings and secured to the face of the said shaft-head, and a layer of protective material extending from the said sleeve to the said disk and protecting the said shaft-head.

2. In a rotary non-corrodible pump and for the purposes explained, the combination of

a chamber consisting of detachable sections, a rotary shaft provided with an enlarged end or head, a non-corrodible sleeve carried by the shaft, a packing device surrounding the said sleeve, a disk provided with wings and secured to the said shaft-head, and a layer of protective material extending from the said sleeve to the said disk and protecting the said shaft-head.

3. In a rotary non-corrodible pump and for the purposes explained, the rotary shaft having a disk or head at its end, earthenware wings carried by the said disk or head, and a protective coating protecting the portions of the shaft from exposure to the liquid, the said wings being secured to the disk or head by bolts embedded in the said protective coatings.

Signed this 25th day of June, 1900, at Niagara Falls, New York.

MAX MAURAN.

Witnesses:

ANNIE V. MULLIN,
ROBERT L. RICE.