(No Model.)

J. G. & P. E. FALCON.

ROTARY PUMP.

No. 346,471. Patented Aug. 3, 1886.

Fig. I.

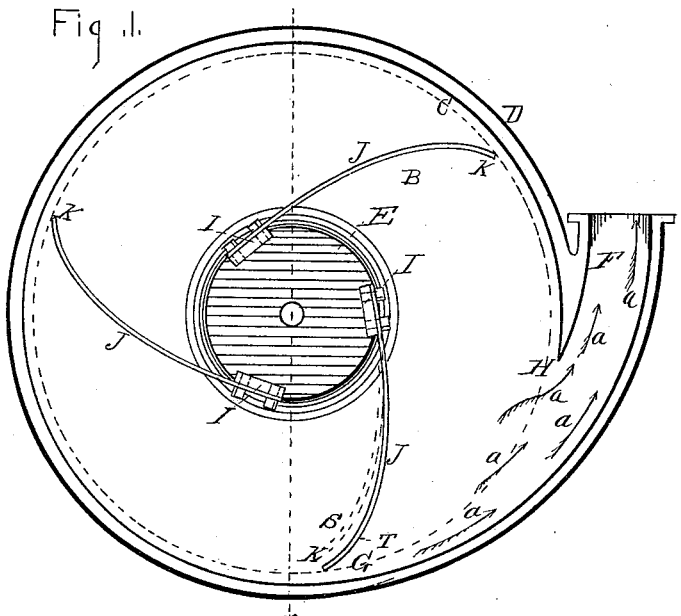
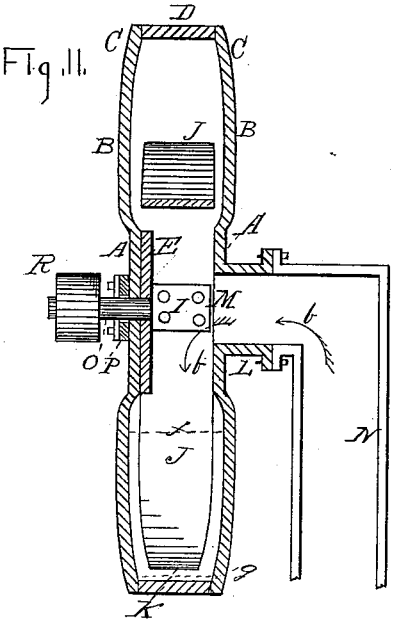


Fig. II.



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JOSEPH G. FALCON AND PETER E. FALCON, OF CHICAGO, ILLINOIS.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 346,471, dated August 3, 1886.

Application filed May 3, 1886. Serial No. 200,996. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH G. FALCON and PETER E. FALCON, citizens of the United States, and residents of Chicago, county of Cook, and State of Illinois, have invented new and useful Improvements in Rotary Pumps, of which the following is a specification, reference being had to the accompanying drawings, illustrating the invention, in which—

Figure I is a side elevation of our improved pump, with front end of case removed more clearly to show the construction; Fig. II, a vertical transverse section thereof on line *x*, Fig. I.

This invention relates to improvements in a rotary pump which is more especially to be used for elevating sand and gravel with water from the bed of a stream or body of water.

The special improvement consists in wings which are formed of plate-steel to spring their entire lengths, but particularly at their free ends, and they are tapered from their hub-connections edgewise on curved lines corresponding substantially to the radial curves of the disks of the exterior case. The central portions of the disks, corresponding in diameter to the sweep of the hub, fit the hub closely and then extend to the periphery, first, by abrupt outward curve, then on substantially straight lines, and then reach the said periphery by inwardly-curved lines, leaving such spaces between the side and end edges of the wings and the exterior case as to prevent the grinding of the sand being elevated; and the construction is such that should a stone come in contact with one of the wings and be too large to pass through the spaces mentioned, the free end of the wing would spring inward to the greater cavity between the disks, and there enlarge the space surrounding the free end of the wing, and thus let the stone pass by without obstructing the movement of the wings, as the whole is hereinafter fully described and shown.

A B C represent the two ends of the circular part of the shell. The parts are each formed in a single casting. A A are circular, and have each a diameter of about the diameter of the hub E, or a little larger, and are a distance apart substantially corresponding to the width of the wings at their points of attachment to the hub E. From the flat parts A the ends swell outward at B, and then at the periphery D of the case they are curved inward. The periphery D may be cast separate and the ends bolted to it in the ordinary manner of making a shell-case for rotary pumps or engines, or it may be cast solid to one head and the other head bolted to it; but in any event the water-discharge pipe F opening into the case from G to H must be made an integral part of the pump-case.

The piston-hub E is a strong metal plate provided with such a number of laterally-projecting lugs, I I I, as there are wings J to be secured to the hub, the lugs I and the thickness of the hub E substantially covering the width of the wings bolted to the lugs. The purpose of the lugs I, instead of a solid hub, is to provide space for the water and extraneous matter to enter the pump-case at M by means of the pipes L N, Fig. II. Where water is taken from the periphery D of the case, the hub E may be solid. The wings J (two or more) are made of suitable spring metal, steel being preferable, and curved, as shown at Fig. I, and at Fig. II their free ends are shown to be about two-thirds their width at the hub.

It will be seen that the swell of the ends of the case at B B is such as to leave an open space at both edges of the wings, and also that periphery D on dotted line *g* is narrower than the width of the space between the parts B on line *f*, also dotted. It will also be observed that the open spaces between the parts B and wings J are wider at the ends K than at the line *f*. This construction is such that should a stone strike any wing at a point, T, and the wing were sprung back, as shown by dotted lines S, the space surrounding the free end of such wing would be greater and let the stone pass by without breaking or obstructing the pump. It is evident that these spring-wings can be employed in other forms of pump-cases than the one shown and do good service—that is, the parts B may be flat instead of being curved in at *c c*.

The general dimensions of the figures given at 1 and 2 may be taken as a scale of one-sixth of a hub and wings turning within a two-foot circle. The pump-case is to be properly secured and the wings made to have a rotation of about four hundred revolutions per minute by means of the shaft and pulley connection O R, the packing to be put in the stuffing-box P

preventing the escape of water except through pipe F. Darts *b* show the direction of the incoming water, and darts *a* that of the outgoing water.

The pump can be primed to start the water, or it can be used in connection with what is known as a "quick-opening valve" in the supply-pipe N.

This pump is in successful operation.

Having described the construction and operation of our improved pump, we claim as new and desire to secure by Letters Patent—

In rotary pumps for elevating sand with water, the spring-wings J, tapered as stated, in combination with the exterior case having sunken disks A A, and laterally-enlarged surrounding parts B B, which terminate in curves corresponding with the curves of the edges of the wings, as specified.

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Witnesses:
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