

No. 640,344.

Patented Jan. 2, 1900.

H. M. WILLIAMS.
PADDLE WHEEL.

(Application filed Apr. 21, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

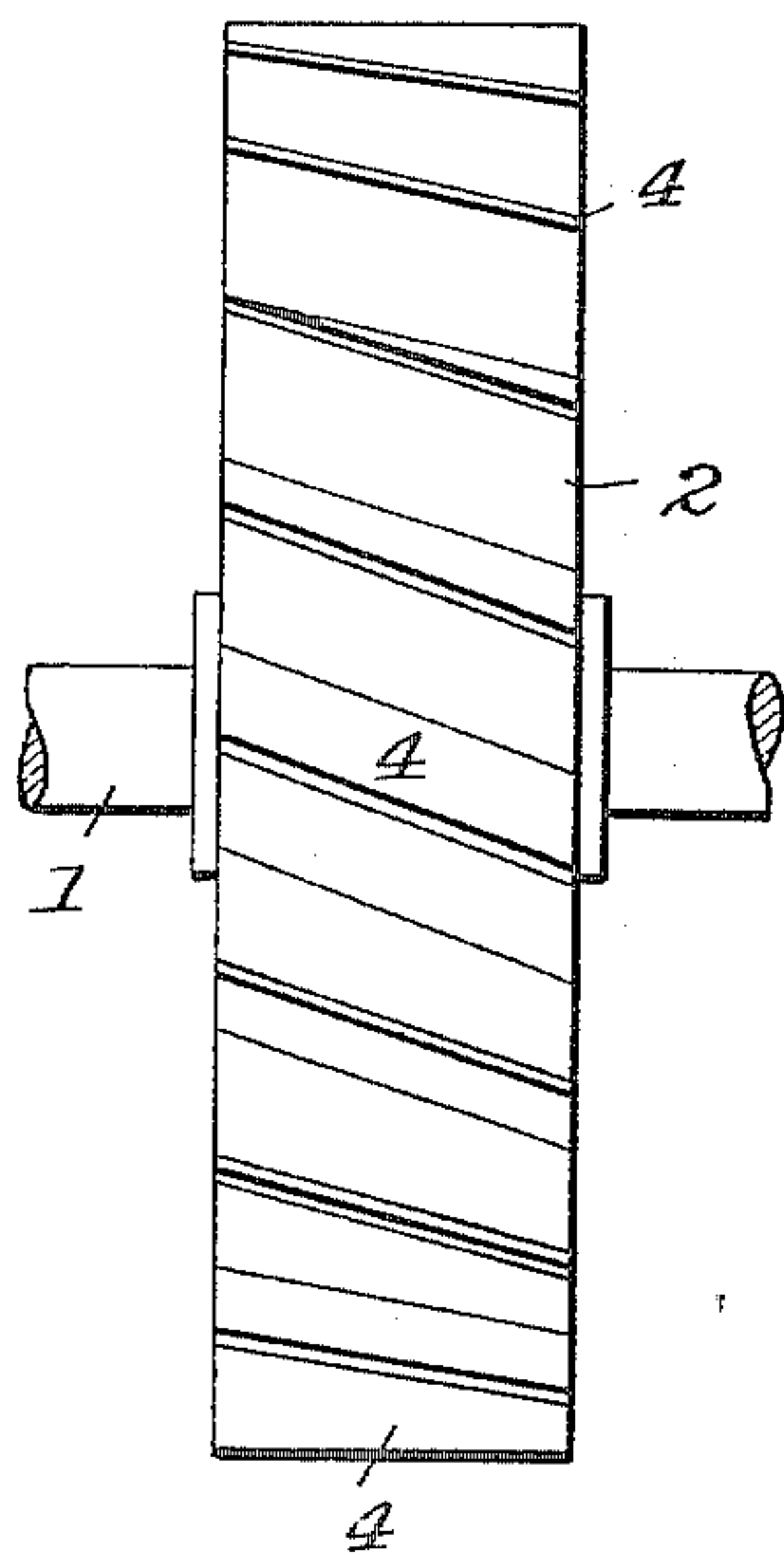


Fig. 3.

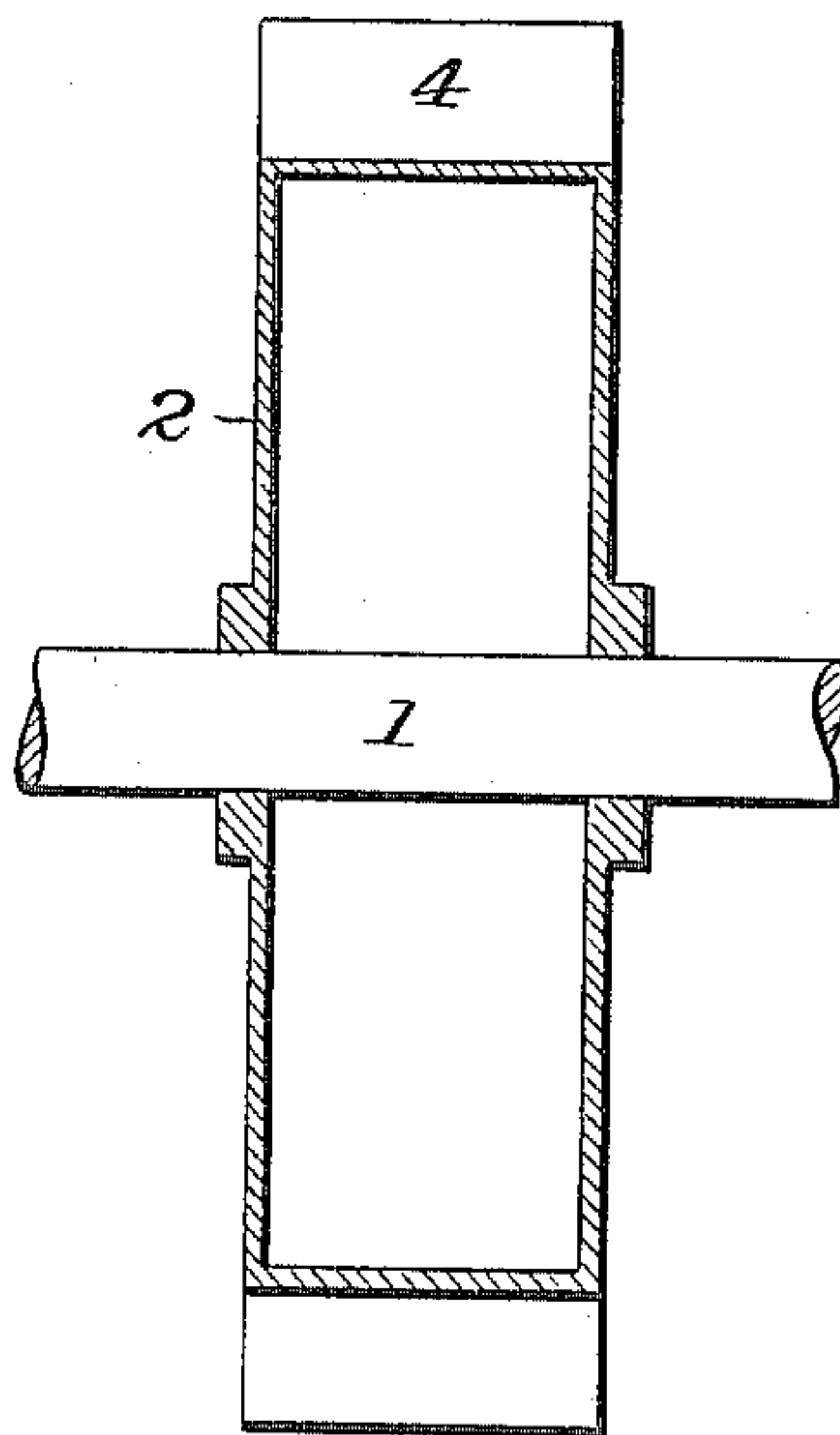
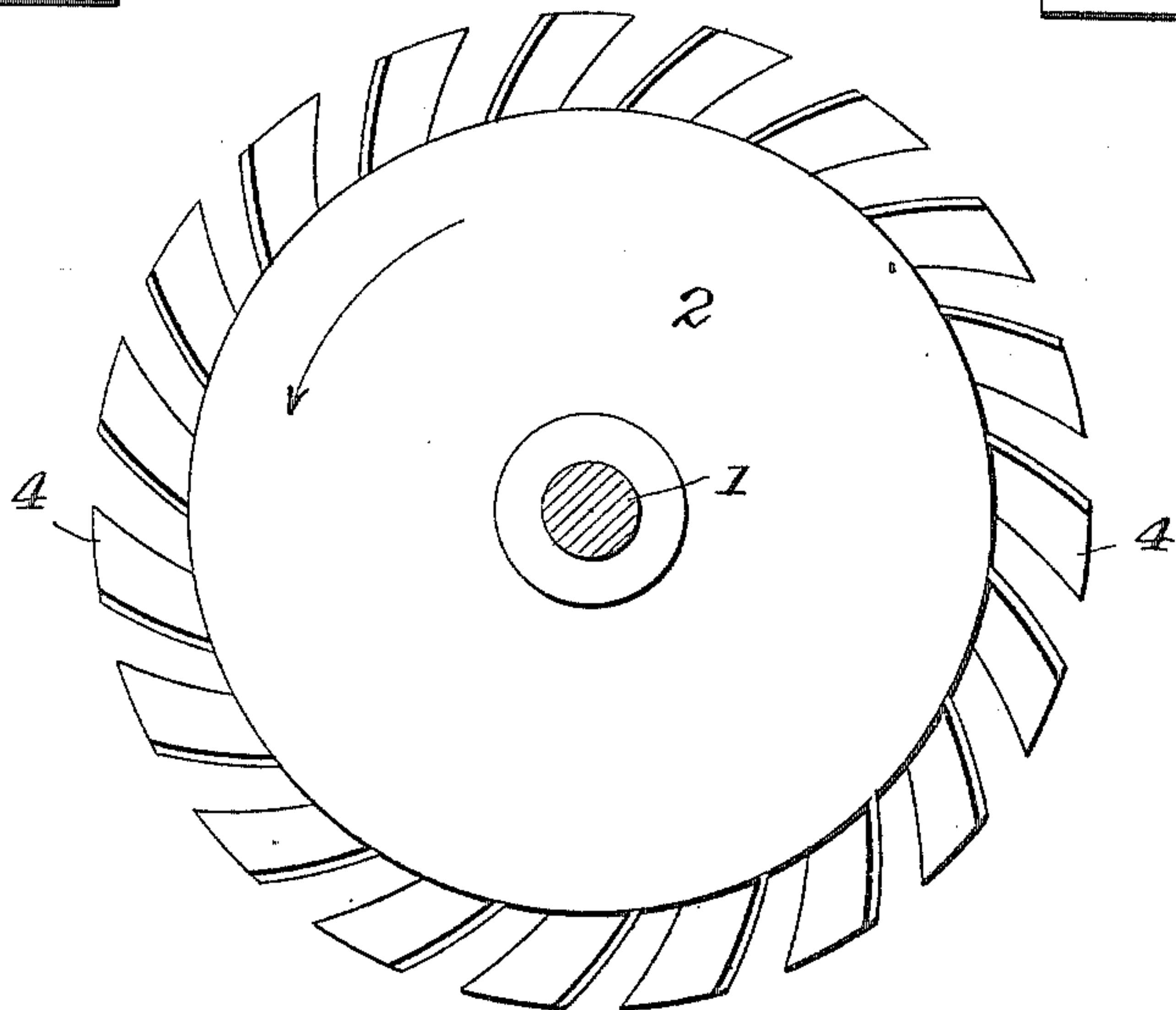


Fig. 2.



Witnesses

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Fig. 4.

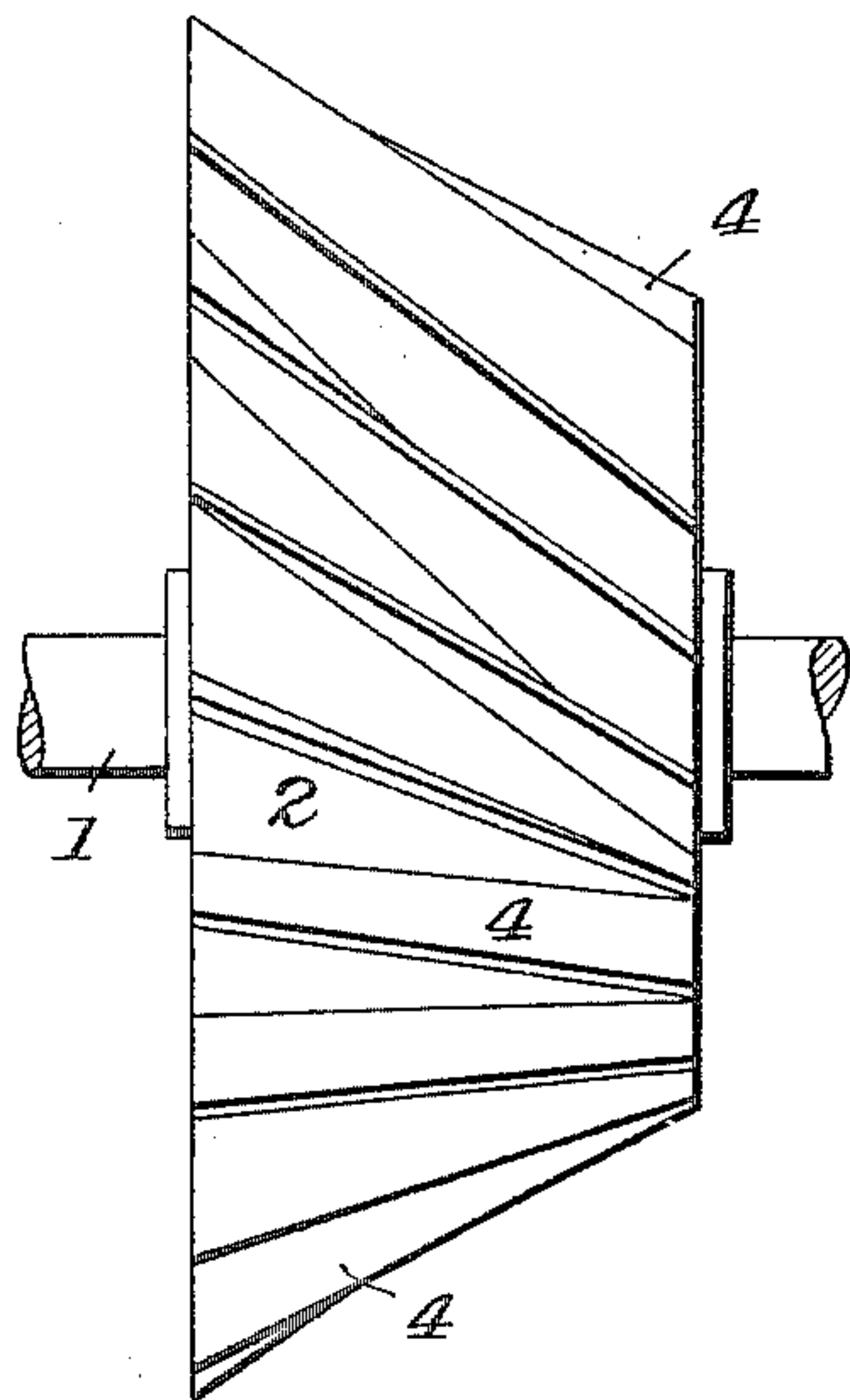


Fig. 6.

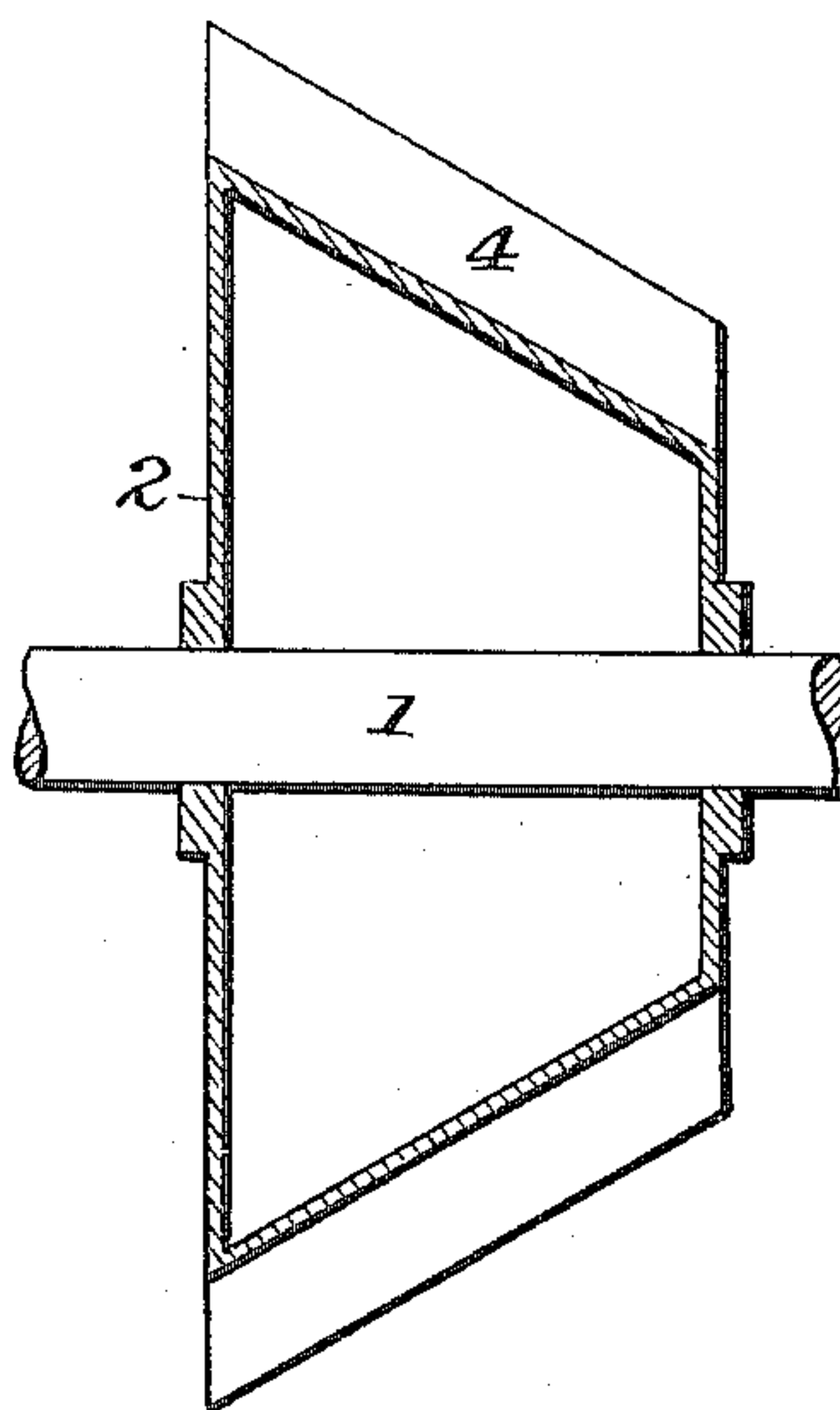
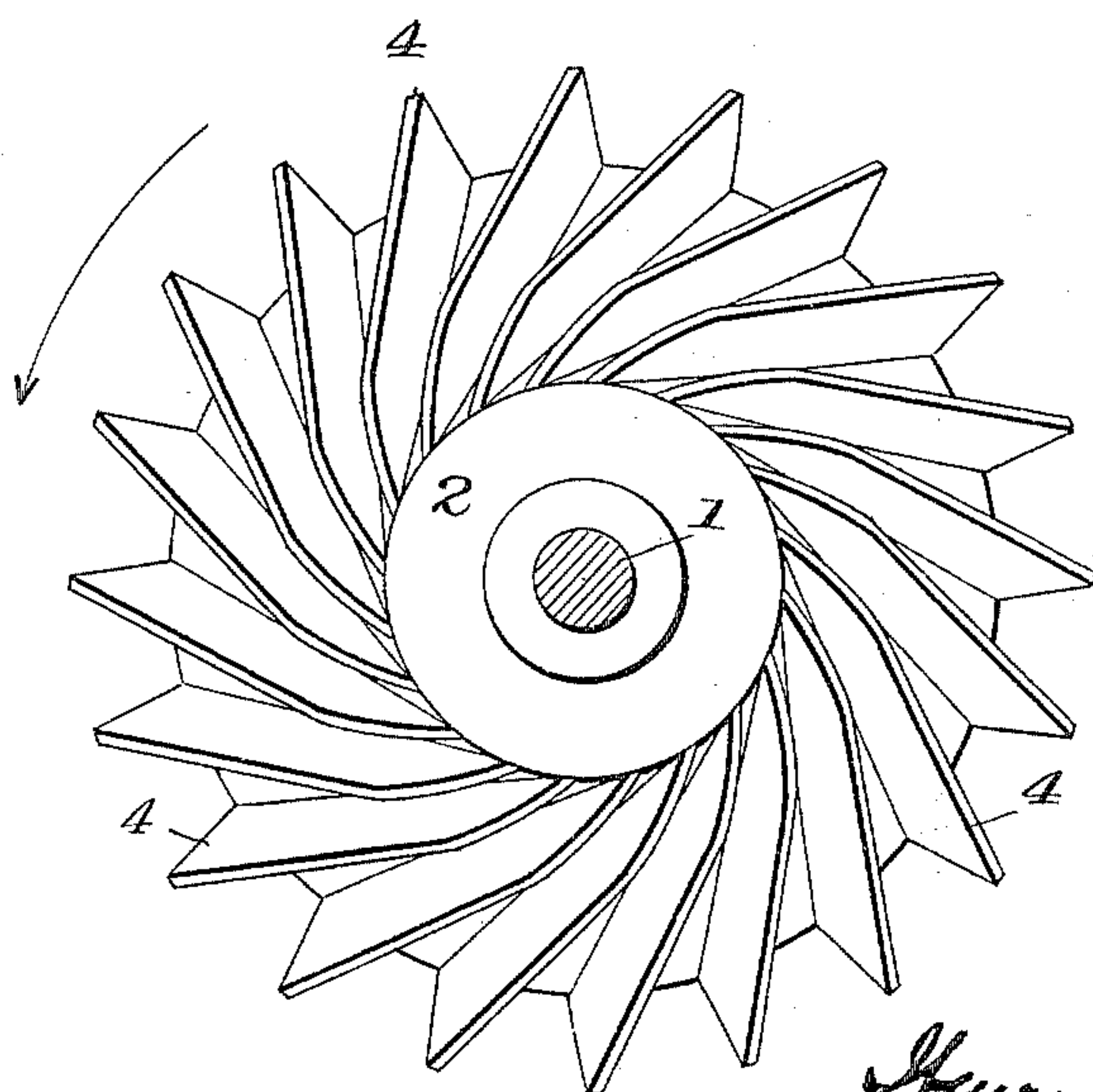


Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY M. WILLIAMS, OF FORT WAYNE, INDIANA, ASSIGNOR OF ONE-FOURTH TO FRANZ BURGER, OF SAME PLACE.

PADDLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 640,344, dated January 2, 1900.

Application filed April 21, 1899. Serial No. 713,946. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. WILLIAMS, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Paddle-Wheels, of which the following is a specification.

My invention relates to paddle-wheels or propellers for vessels, and more particularly to what are known as "buoyant" propellers or paddle-wheels, the object being to provide a simple, cheap, and effective construction whereby a vessel supplied with a suitable number of wheels may be propelled through the water in a satisfactory manner; and to these ends my invention consists in a buoyant paddle-wheel or propeller having the general features of construction substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings, Figure 1 is a side view of a propeller embodying my invention. Fig. 2 is an end elevation of the same. Fig. 3 is a longitudinal vertical section of the same. Figs. 4, 5, and 6 are respectively side, end, and sectional views of a modification embodying my invention.

The tendency of modern propulsion is to divide the power and apply it through the medium of various and numerous propelling devices with the purpose of distributing the power and exerting it in different parts or portions of the vessel or other device being propelled; and one of the objects of my present invention is to provide a paddle-wheel or propeller adapted to be utilized in this connection, although, of course, it can be used in any connection to which it is applicable. It has already been proposed to provide a vessel with a number of so-called "buoyant" paddle-wheels arranged in proper relation to the sides and ends of the vessel and to supply each with its proper proportion of power; and my present invention is specially applicable to this class of propelling means, and in use a number of the paddle-wheels or propellers are arranged in succession on each side of the vessel with a proper motor connection for each propeller, and the shafts of the paddle-wheels or propellers may be arranged so as to be movable vertically and adjustable as to

load; but the details of its construction and arrangement are not shown herein or specifically described, as they will form the subject-matter of another application.

Referring to the drawings, upon a suitable propelling-shaft 1 is secured a drum 2, either of cylindrical, conical, or similar shape, and this drum is air-tight, so as to form a buoyant body for the paddle-wheel. Around the circumference of the paddle-wheel or propeller are arranged a series of paddles 4, being secured to the face of the drum in any suitable way. These paddles 4 are either parallel or diagonally arranged with relation to the circumference of the drum and to the axis of the shaft to which the drum is secured, or they may be placed parallel with the line of the axle. Furthermore, the paddles 4 may be curved slightly and project from the surface of the drum in slightly-curved radial lines, the curves preferably extending rearward with relation to the normal direction of rotation of the paddle-wheels, as best indicated in Fig. 2. Thus the paddles may be generally described as diagonal tangent paddles attached to the circumference of the drum. Furthermore, the outer edges of the paddles, as shown, are in right lines, while a section through the paddles or at their ends is a slightly-curved line tangential to the surface of the drum.

A paddle-wheel thus constructed and arranged in connection with a vessel (there being a suitable number on each side of the vessel and each properly driven through the medium of its shaft) acts as a buoyant propeller, tending to prevent the undue immersion of the vessel, and the action of the diagonal tangent paddles in operation further aids in tending to lift or buoy the vessel upward and prevent its being submerged to any great extent. Of course it is understood that the paddle-wheels will be submerged according to the weight of the vessel and its contents and their number and arrangement thereon; but, as above indicated, their buoyancy when the wheels are still, together with the peculiar diagonal tangential shape of the paddles in operation, tends to lift or raise the vessel, so that in actual operation the paddles may be

said to practically "walk" on the surface of the water rather than be submerged to any great extent therein.

When the paddle-wheel rotates in the direction indicated in Fig. 2, the tangential arrangement of the paddles causes them to present faces to the water more or less parallel with the surface thereof, and while in this form they do not enter the water as freely, perhaps, as they would if they were not tangentially arranged they thus tend to lift the paddles out of the water, and, further, they are more readily withdrawn from the water, leaving it in nearly a vertical line, and this advantage counterbalances any disadvantage of the arrangement, and it further prevents the carrying or lifting of the water by the paddles as they are withdrawn from the water. Furthermore, the diagonal arrangement of the paddles tends to assist them in entering the water and in leaving the same and at the same time permits of the buoyant action or tendency before referred to.

While I have shown my invention embodied in two forms of drums, it is obvious that drums of other shapes may be used and that the paddles may be applied thereto in various ways embodying the general features of my invention without departing from its spirit,

and I therefore do not limit myself to the precise construction and arrangement shown.

What I claim is—

1. A paddle-wheel comprising a drum provided with diagonal tangent paddles attached to the circumference of the drum and extending across the face thereof, substantially as described.

2. A paddle-wheel comprising a drum provided with diagonal tangent paddles attached to the circumference of the drum and extending across the face thereof, the outer edges of the paddles being straight while the ends are curved tangentially to the circumference of the drum, substantially as described.

3. A paddle-wheel comprising a cone-shaped drum, paddles attached to the surface of the drum extending across the face thereof and arranged to project tangentially therefrom in a rearward direction, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY M. WILLIAMS.

Witnesses:

GEO. D. CRANE,
F. L. FREEMAN.