

No. 607,042.

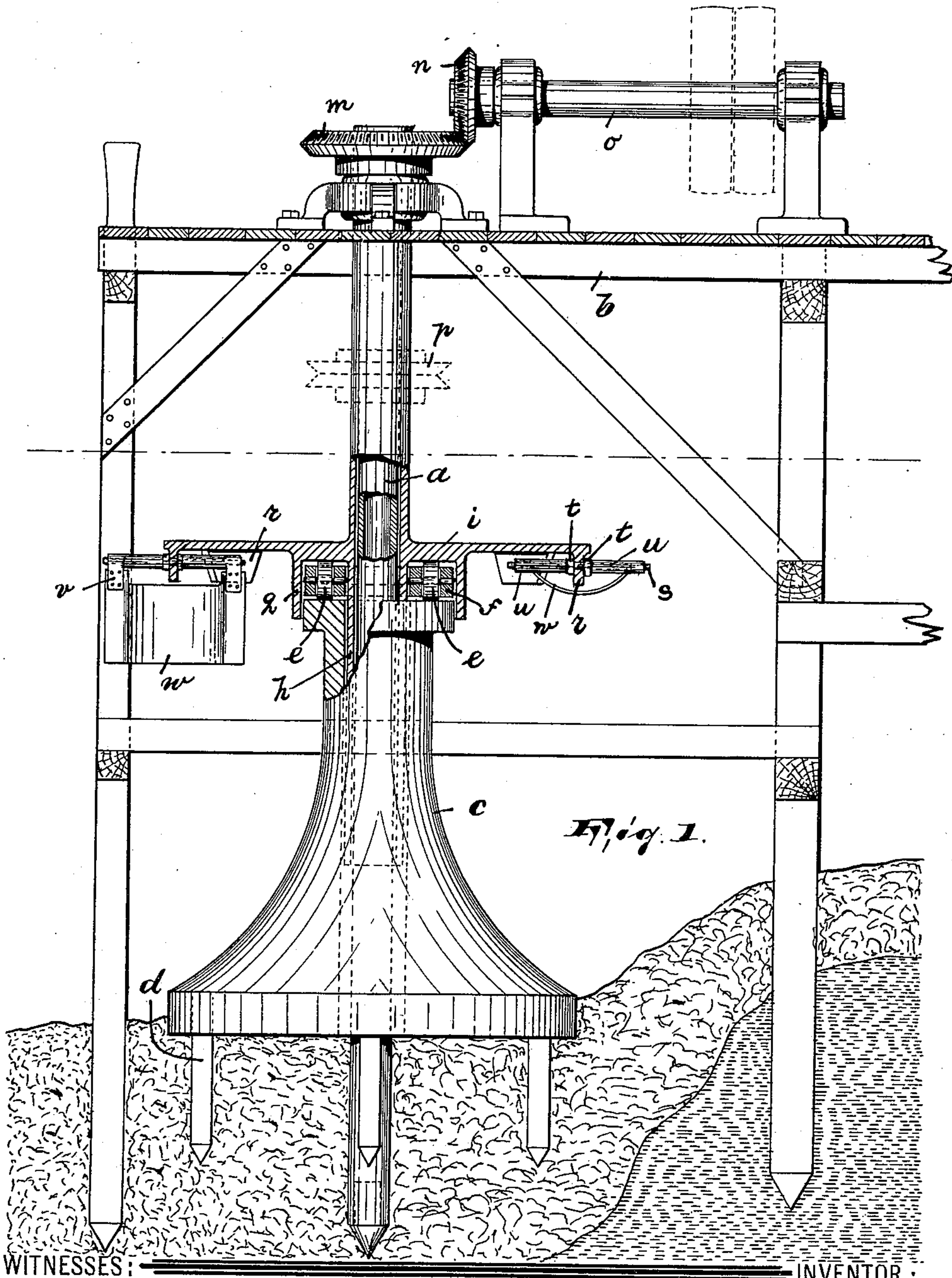
Patented July 12, 1898.

F. JACOB.
WATER WHEEL.

(Application filed Feb. 26, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

INVENTOR:

Wm D. Bell.
Louise Snyder.

Frederick Jacob

BY *Gartner & Co*
ATTORNEYS.

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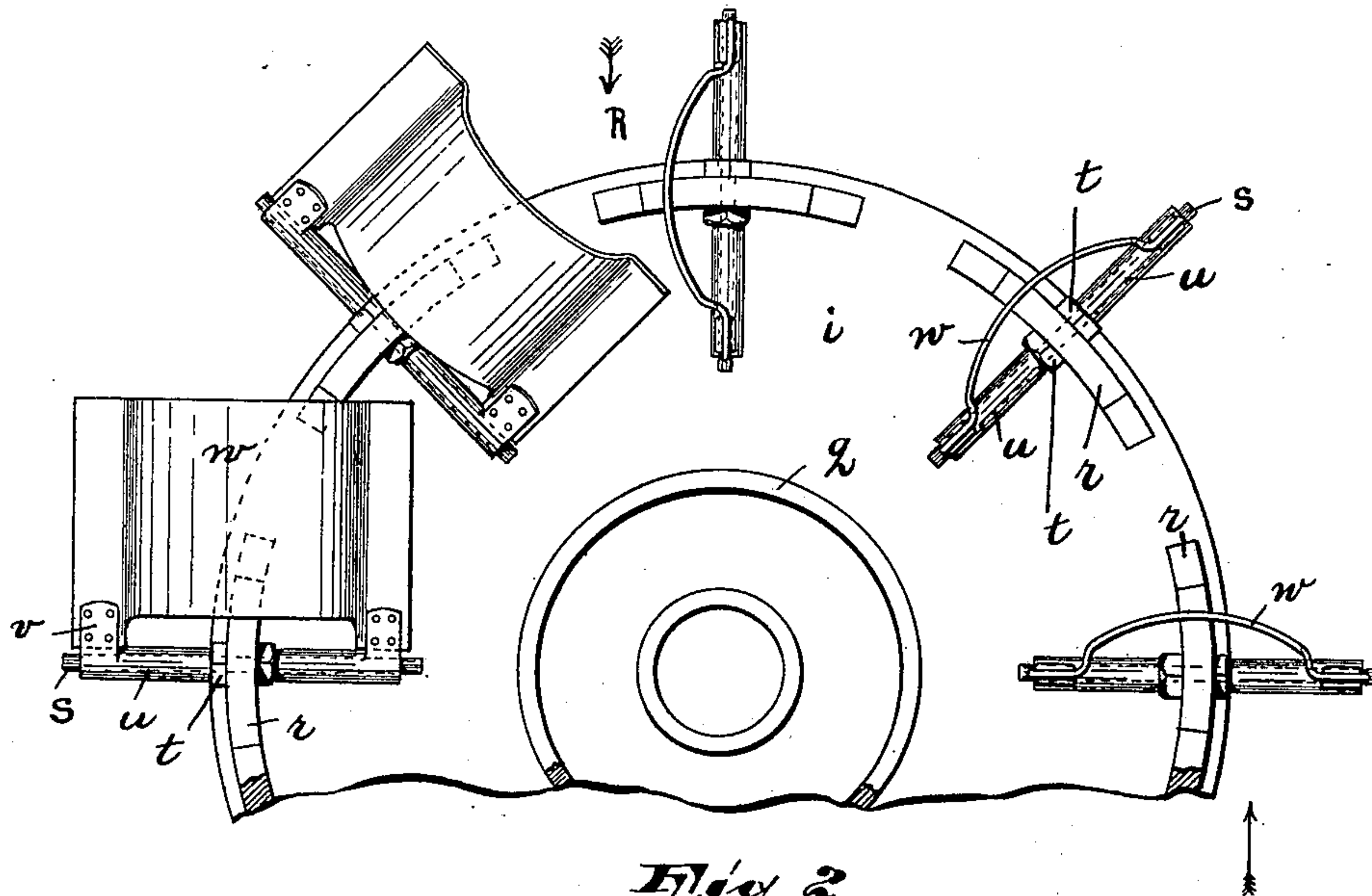


Fig. 2.

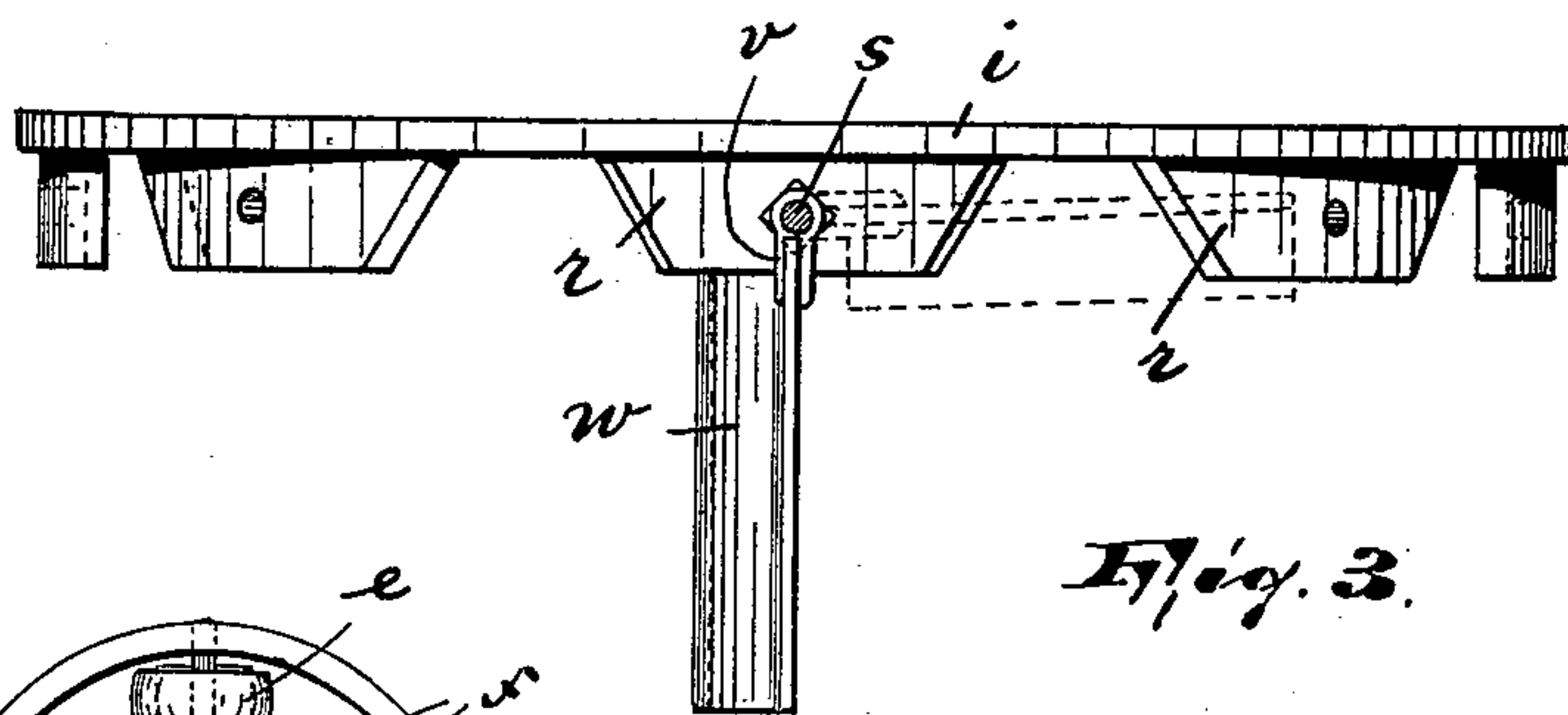
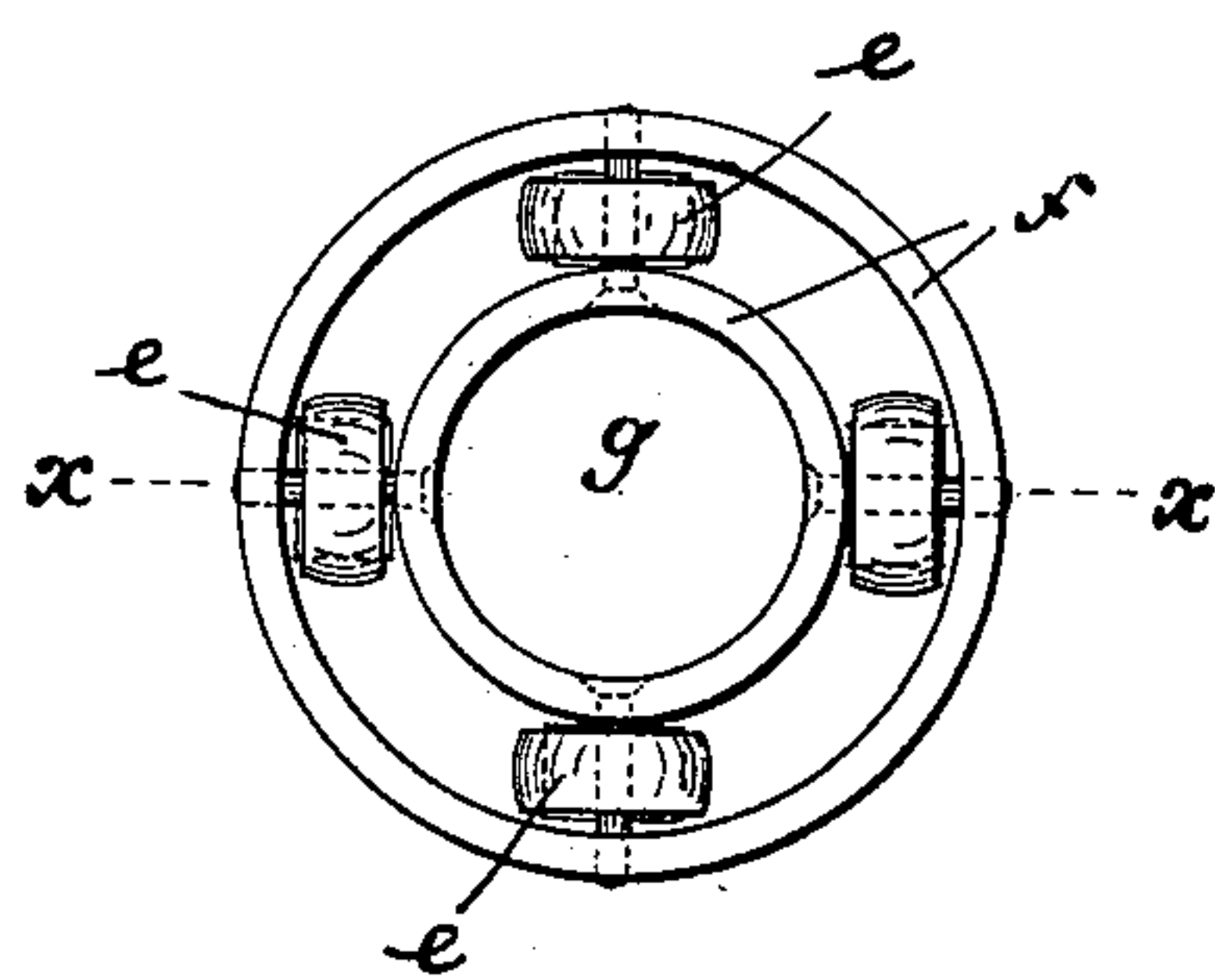


Fig. 3.



July. 4.

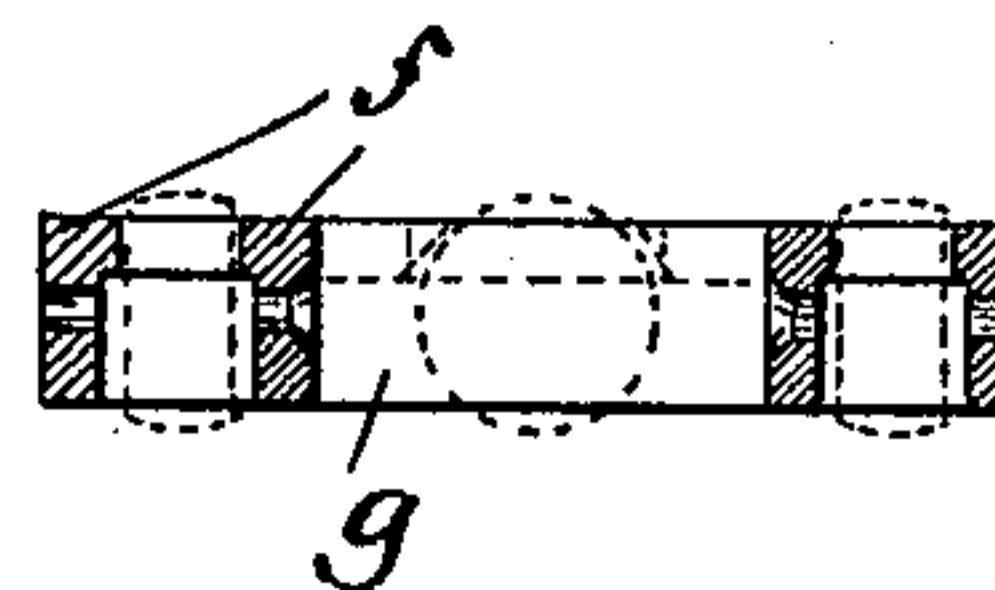


Fig. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

FREDERICK JACOB, OF NEWARK, NEW JERSEY.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 607,042, dated July 12, 1898.

Application filed February 26, 1898. Serial No. 671,851. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK JACOB, a citizen of the United States, residing in Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Water-Wheels; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a water-wheel which can be quickly and readily arranged within the water of any stream, river, or bay, and which is operated by the current of the stream or river or by the ebb and flow of ocean tides, and which wheel, besides being powerful, will revolve in one direction only, notwithstanding the direction of the current, and is not liable to get out of order.

The invention consists in the improved water-wheel and in the combination and arrangement of the various parts, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side elevation of my improved water-wheel, partly in section, and of its supporting frame or pier; Fig. 2, an enlarged underneath view of a portion of the wheel proper; Fig. 3, a side elevation of Fig. 2, viewed in the direction of the arrow R, only one of the blades being shown; Fig. 4, an enlarged top plan view of a certain antifriction-roller bearing; and Fig. 5, a sectional view on the line *xx* of Fig. 4, the antifriction-rollers being illustrated in dotted lines.

In said drawings, *a* represents a vertically-arranged shaft having its lower portion preferably pointed and driven into or embedded in the bottom of the river or bay, while its upper portion is supported in a frame or pier *b* of any suitable design and construction. The lower portion of the shaft is surrounded by a pillar *c*, having its base anchored to the bottom by spikes *d d* or in any desired manner. The central bore of said pillar *c* is larger

than the diameter of the shaft *a*, and its top portion is flattened to form a bearing for a series of antifriction-rollers *e*, which latter are mounted in a circular frame *f*. Said frame is provided with a central circular hole or opening *g* and is penetrated by a tube *h*. The latter, which furnishes the hub for the horizontally-arranged disk *i*, engages with its lower portion the annular chamber formed between the shaft *a* and the central bore in the pillar *c*. The upper portion of said tube *h* projects above the water-line and carries a beveled gear *m*, meshing into a beveled pinion *n*, mounted on the horizontal shaft *o*, from which the power can be transmitted in any desired manner, as will be manifest.

It may be remarked that instead of the beveled-gear connection a grooved pulley *p* can be directly secured upon the projecting portion of the tube *h*, by which arrangement the friction in the power-transmitting means is greatly reduced.

The central portion of the disk *i* bears upon the antifriction-rollers *e* and is provided with an annular flange *q*, extending downward and surrounding the head of the pillar *c*, and thus furnishing a guard or protection for the antifriction-roller bearings.

At or near the outer edge of the disk are arranged a series of downwardly-extending lugs or projections *r*, each provided in its center with a horizontal radially-arranged hole, in which is removably secured a pin or axle *s* by means of nuts *t t* or in any desired manner.

On each side of each pin or axle *s* is loosely arranged a sleeve *u*, provided at or near its outer end with lugs or projections *v*, to which are secured the flattened edges of a curved rectangular-shaped blade or float *w*, as clearly illustrated in Figs. 1, 2, and 3 of the drawings.

The blades or floats *w* when in normal position depend vertically from their respective pins or axles and bear with their central upper portions against the under side of their respective lugs or projections *r*, as clearly shown in Fig. 3, whereby they are limited in their rearward movements. Each blade after being carried about one hundred and eighty degrees from the point at which the current of the water started to act on it gradually folds back or is moved upward into the

position illustrated in dotted lines in Fig 3, and in that position offers very little resistance to the water, as will be manifest. By having the blades curved in their central portions said blades are given a better hold upon the water, as will be manifest.

It must also be remarked that said water-wheel is preferably entirely submerged under the surface of the water, and it can be readily seen that the same can be arranged below the freezing depth of the water and can thus be utilized at any season, and, further, that said water-wheel is not dependent upon a steady current, but that it will also be operated by the change from high tide to low tide, and vice versa.

It will be manifest that instead of one disk *i*, with its depending blades or floats *w*, a series of disks with floats or blades can be arranged one above the other and mounted upon one tube or hub, whereby increased power is generated.

I do not intend to limit myself to the precise construction shown and described, as various alterations can be made without changing the scope of my invention; but

What I claim as new, and desire to secure by Letters Patent, is—

1. A water-wheel comprising a vertical shaft, a pillar surrounding the lower portion of said shaft, a horizontal disk revolubly mounted on said shaft and provided at or near its outer edge with a series of downwardly-extending lugs or projections, a series of antifriction-rollers intermediately arranged between the disk and the head of the pillar, a series of radially-arranged blades pivotally connected to their respective lugs or projections and having their central portions outwardly curved, and a power-transmitting wheel-carrying tube or hub connected with said disk, substantially as and for the purposes described.

2. The combination with a vertical shaft, of a pillar surrounding the lower portion of said shaft, a power-transmitting wheel-carrying tube revolubly mounted on said shaft and

extending into the central bore of said pillar, a horizontal disk mounted on said tube and provided with a downwardly-extending annular flange, a series of antifriction-rollers intermediately arranged between said disk and the pillar, a circular frame surrounding the tube and supporting said antifriction-rollers, and a series of radially-arranged blades or floats pivoted to and depending from the outer portion of said disk, each of said blades being limited in its rearward movement, substantially as described.

3. A water-wheel comprising a vertical shaft, a pillar surrounding the lower portion of said shaft, a horizontal disk revolubly mounted on said shaft, a series of radially-arranged pins or axles carried by said disk, a series of antifriction-rollers intermediately arranged between the disk and the head of the pillar, a blade or float loosely mounted on each pin or axle, and a power-transmitting wheel-carrying tube or hub connected with the disk, substantially as and for the purposes described.

4. The combination with a vertical shaft, of a pillar surrounding the lower portion of said shaft, a power-transmitting wheel-carrying tube revolubly mounted on said shaft and extending into the central bore of said pillar, a horizontal disk mounted on said tube and provided with a downwardly-extending annular flange, a series of antifriction-rollers intermediately arranged between the disk and the head of the pillar, and a series of radially-arranged blades or floats pivoted to and depending from the outer portion of the disk, each of said blades being limited in its rearward movement, substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of February, 1898.

FREDERICK JACOB.

Witnesses:

ALFRED GARTNER,
WM. D. BELL.