(No Model.)

J. J. WILLIAMS.

PROPELLER.

No. 312,781. Patented Feb. 24, 1885.

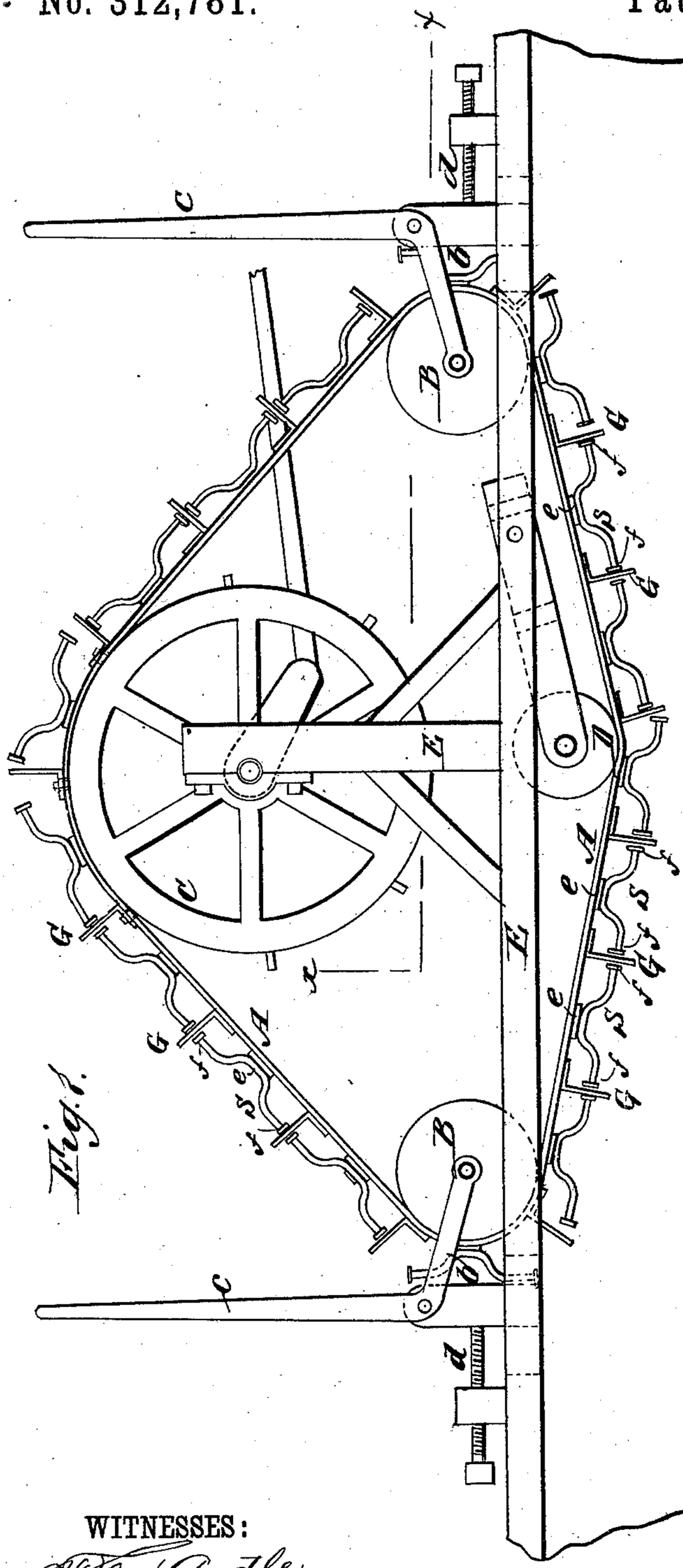

Fig. 1.

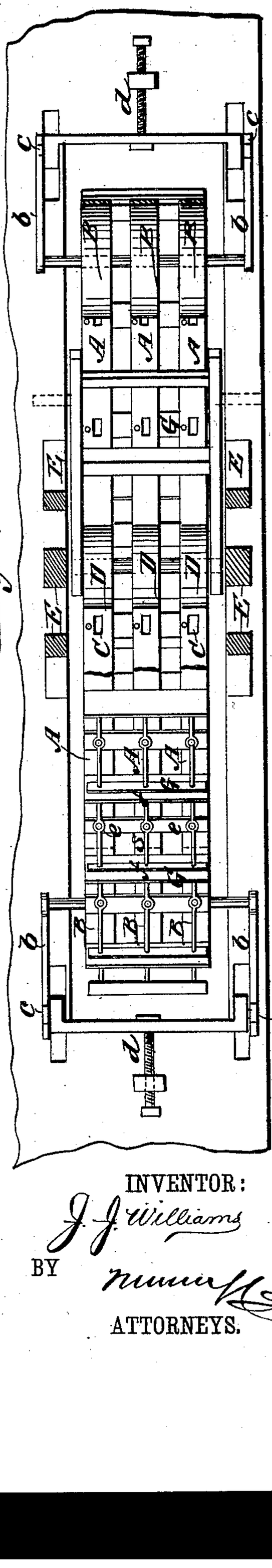

Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN JAY WILLIAMS, OF POINT PLEASANT, MISSOURI.

PROPELLER.

SPECIFICATION forming part of Letters Patent No. 312,781, dated February 24, 1885.

Application filed September 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN JAY WILLIAMS, of Point Pleasant, in the county of New Madrid and State of Missouri, have invented certain new and useful Improvements in Propellers, of which the following is a full, clear, and exact description.

This invention is designed as an improvement upon endles chain or flexible propellers in which the chain or chains that carry the buckets are arranged to run over end and one or more intermediate wheels or pulleys to give a long horizontal or approximately horizontal stroke in the water.

In my invention, however, I discard the use of endless chains, and substitute therefor a series of endless metal bands, and rivet or rigidly attach the buckets thereto, thus doing away with all working joints and adding greatly to the durability and efficiency of the propeller. Combined with and attached to said bands also are peculiarly constructed braces which, while not secured to the buckets, serve to support them when in action. Means are likewise provided for raising and lowering the endless bands of buckets, to secure a proper immersion of the buckets in the water, and for keeping the bands at a proper stretch.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 represents a side elevation of a propeller embodying my invention, and Fig. 2 a partially sectional plan on the line *x x* in Fig. 1.

A A A indicate a series of parallel flat metallic bands, steel or iron preferred, carried by and arranged to run round a corresponding number of opposite end pulleys or wheels, B, and over an upper sprocket-wheel, C, of larger dimensions. This wheel C is the driver of the endless bands, and extends wholly through or between them, as does also a lower small wheel or pulley, D, hung in an adjustable frame, E, and bearing on the inner faces of the bands in their lower or parallel line of travel, which is designed to be horizontal, or approximately so. Said wheels C and D may either be made the whole width of the several bands or have their surfaces divided up to carry each band separately. The bands thus supported and driven are restrained from slipping. The end pulleys, B, may also be adjustable up or down and horizontally—as, for instance, by hanging them in rocking frames *b*, operated by levers *c*—and adjustable horizontally by screws *d;* or they may be otherwise supported and adjusted to assist in keeping the bands moderately taut, and to raise or lower them to adapt the immersion of the buckets, as circumstances may require. The driving-wheel C, however, should have a fixed bearing, and may be rotated by a crank and connecting-rod from the engine or motor, or in any other suitable way, and the frame E, which supports it and the several parts, may be of any desired description.

G G indicate the buckets, made of metal, with their inner edges bent to form a flange by which to rivet or otherwise permanently secure them to the outside faces of the bands A. Between these buckets, which are arranged at any suitable distance apart, and which extend wholly across the bands, are arranged a series of crooked or doubled armed braces, S, permanently secured by rivets or otherwise at their center *e* to the several bands, and formed in part of opposite end cross-bars, *f*, which serve to support the faces and backs of the buckets when in action; but which, not being attached to the buckets, provide for the necessary flexibility of the endless bands of buckets when rounding the several wheels which carry them. By this construction of the propeller all loose or working joints, both in the endless devices which carry the buckets and in the buckets themselves, are avoided, and the buckets are firmly braced when in action, thus securing a very durable and efficient propeller having a long stroke in the water.

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

1. In an endless flexible propeller, the combination, with the endless belts or bands and their buckets G, of the drive-wheel C, the two end wheels, B B, the pivoted rocking frame *b*, within which the wheels B B are mounted, and the levers *c* for operating the same, substantially as set forth.

2. The combination, with the fixed upper drive-wheel, C, adjustable end wheels, B B, and the wheel D, mounted below the wheel C in an adjustable swinging frame, of the band A and the buckets G thereon, substantially as set forth.

3. The combination, with the endless belt and its buckets, of the end wheels, B B, rock-frames *b*, and set-screws *d* for adjusting the said rock-frames and wheels B B, carried thereby, in a horizontal direction, whereby said wheels are afforded a horizontal and vertical adjustment, substantially as set forth.

4. The endless belt or band A, buckets G, secured thereto, and the braces S, secured at their centers *e* to the band, and engaging the backs and faces of the buckets, substantially as set forth.

JOHN JAY WILLIAMS.

Witnesses:
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