

No. 642,935.

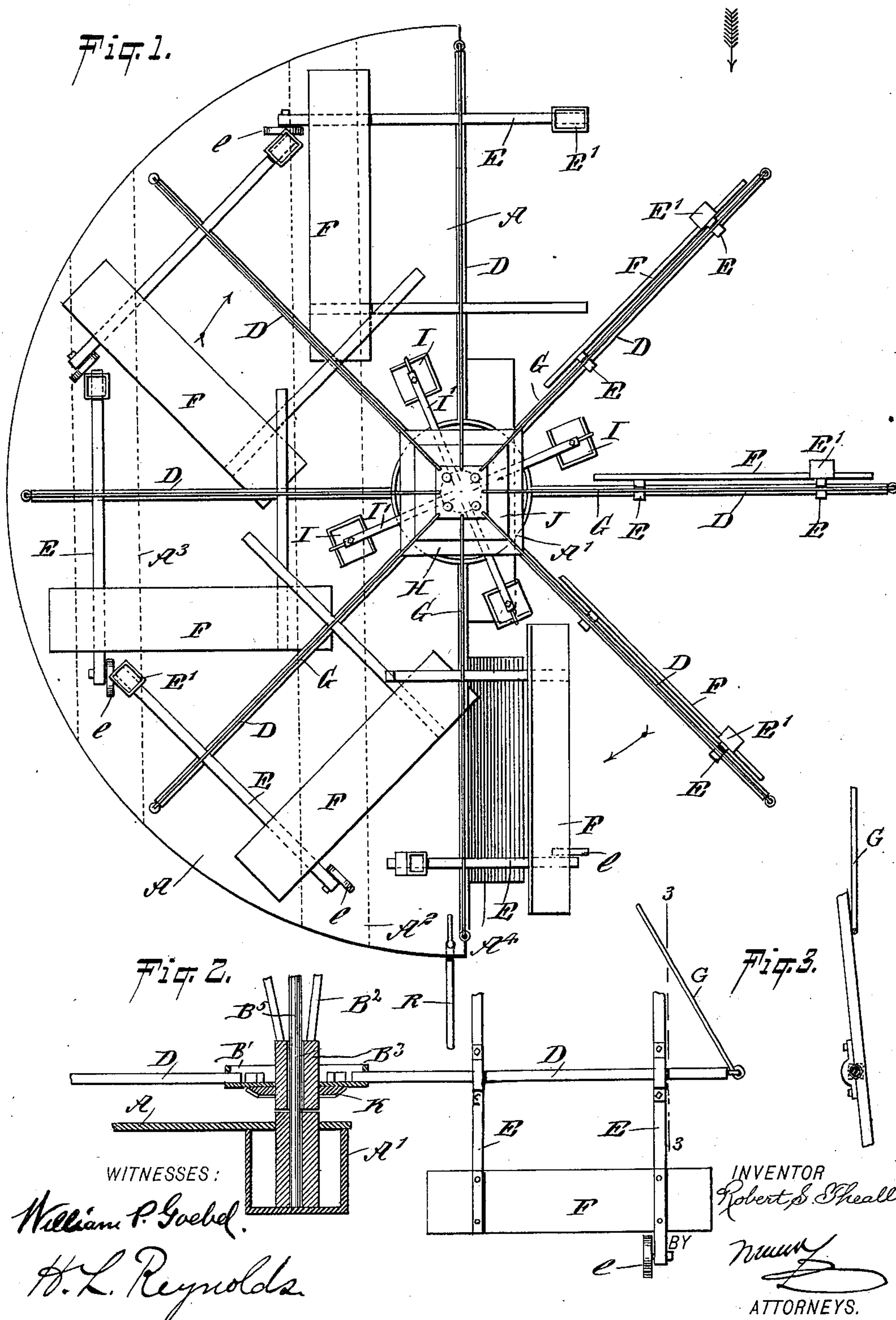
Patented Feb. 6, 1900.

R. S. THEALL.
CURRENT MOTOR.

(Application filed Feb. 6, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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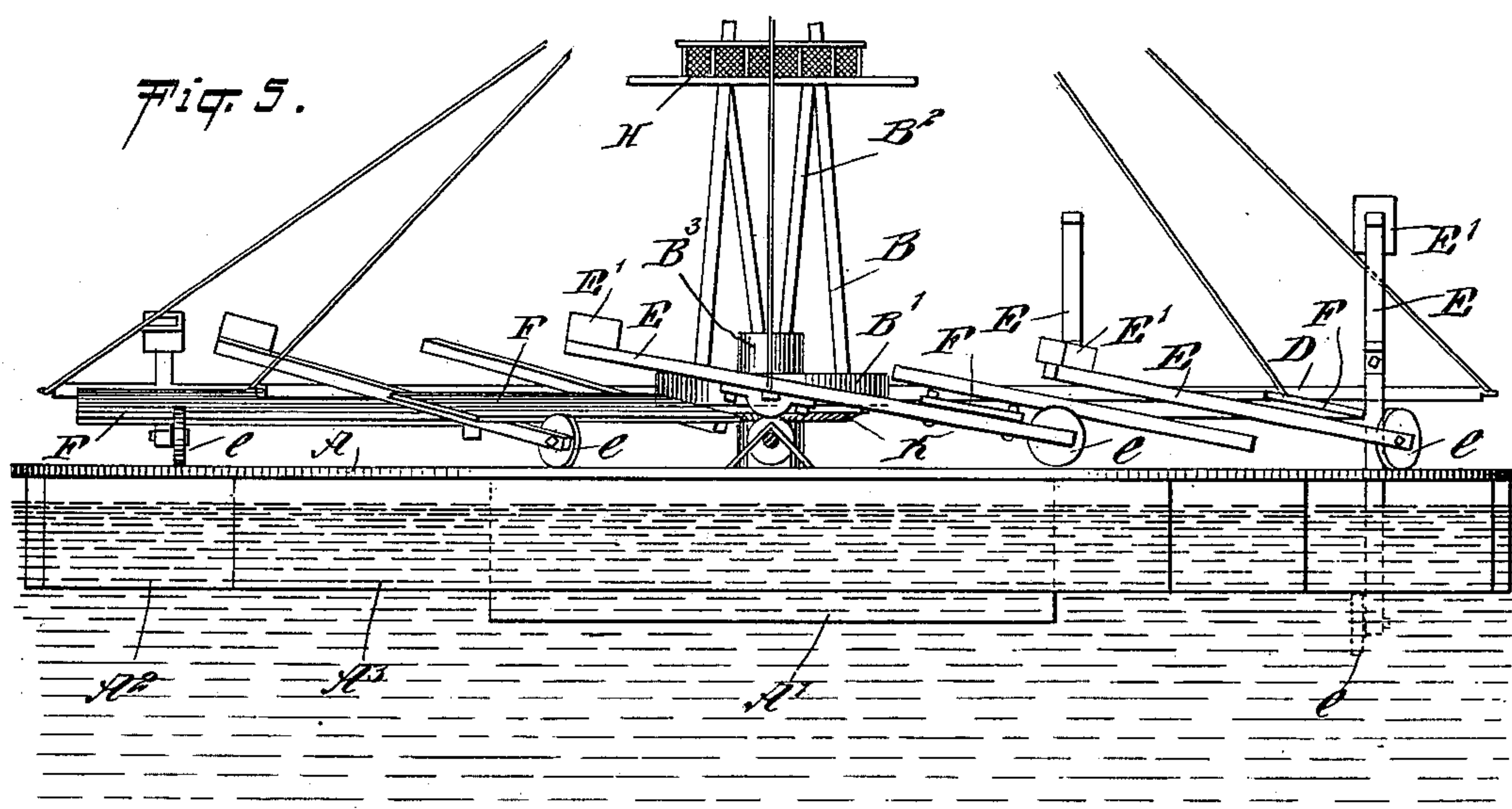
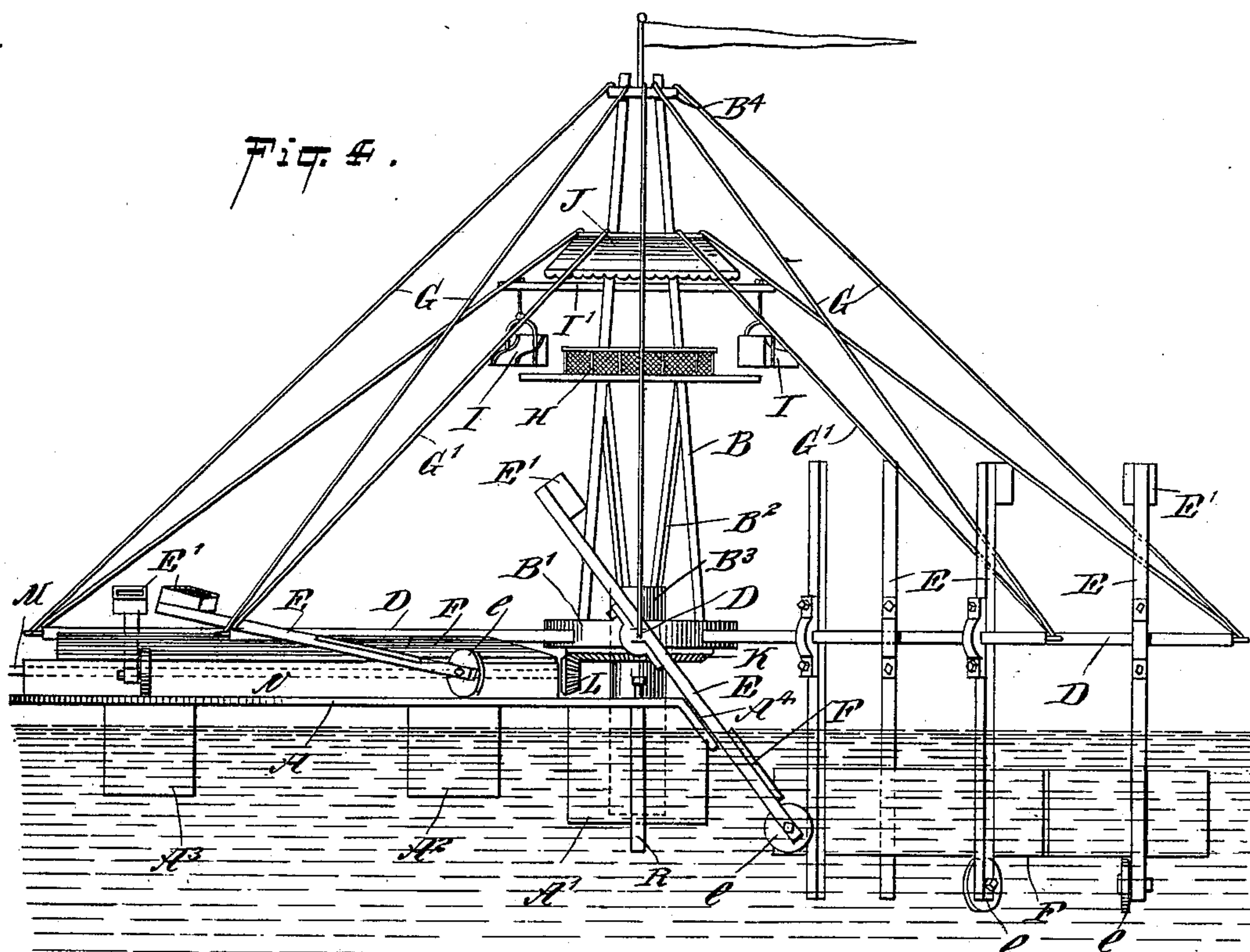
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(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

William P. Guibel.
H. L. Reynolds

INVENTOR
Robert S. Theall
BY 
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ROBERT SALTER THEALL, OF FORT PIERRE, SOUTH DAKOTA.

CURRENT-MOTOR.

SPECIFICATION forming part of Letters Patent No. 642,935, dated February 6, 1900.

Application filed February 6, 1899. Serial No. 704,682. (No model.)

To all whom it may concern:

Be it known that I, ROBERT SALTER THEALL, of Fort Pierre, in the county of Stanley and State of South Dakota, have invented a new and Improved Current-Motor, of which the following is a full, clear, and exact description.

My invention relates to an improvement in current-motors or devices designed for the utilization of the power of a flowing stream, ocean-tides, &c., and comprises the novel features hereinafter described and claimed.

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

Figure 1 is a top plan view of my device. Fig. 2 is a detail sectional elevation taken through the lower portion of the mast and its support. Fig. 3 is a detail section on the line 3 3 in Fig. 2, showing the manner of pivoting and supporting the buckets or vanes upon the sweeps. Fig. 4 is an elevation of my device looking upstream, and Fig. 5 is an elevation looking across the stream.

My device is mounted upon a float which is preferably of a semicircular outline, although a float of rectangular shape might be used. This float, as herein shown, consists of a platform A, which is supported upon two principal floats A² and A³, which consist of long and narrow pontoons or boxes extending beneath the float and in the direction of the flow of water, and a third float or pontoon A', which is herein shown as being of less length, but greater cross-section. This pontoon A' is placed in the center of the length of the platform and projects from its straight or diametrical side. Within this float is placed the support for the mast B.

The mast is herein shown as being of a skeleton construction, consisting of the outer ribs B and braces B², which are secured together at suitable points, the outer ribs B being secured at their lower ends to a disk which terminates in a ring B' and the braces B² being secured to the hub B³ of said disk. At their upper ends the ribs B are secured to a common plate B⁴. The ring B' has notches or openings which receive the inner ends of the sweeps D. Said sweeps may terminate just within the ring or engage the hub B³, as

desired. The hub B³ has a central hole, which receives the center post or pivot B⁵, the latter being fixedly secured to the float close to one edge and forming a pivot about which the mast and sweeps turn. The sweeps D extend from the mast like the spokes of a wheel and are horizontally placed. Their outer ends are supported by means of stays or guys G, which extend upwardly to the upper end of the mast. A second set of guys or stays G' may be employed, extending to a point on the mast slightly below the top. This skeleton construction of the mast, with the guys or stays supporting the outer ends of the sweeps, makes a very strong and yet light construction.

Upon the outer portion of each sweep is mounted a set of two or more bars E, which are pivoted so as to swing in vertical planes. To the lower ends of these bars are secured the buckets or vanes F, which are adapted to drop into the water during one-half of their travel about the center. The upper ends of the bars E extend upwardly, and one or both may be provided with counterweighting-boxes E', which may be filled with any convenient material, so as to partly or wholly counterbalance the weight of the buckets or vanes F. In use the weight of the buckets F should be only partly counterbalanced, so that when it reaches the proper point for entrance into the water it will promptly drop upon and be engaged by the water. One or more of the bars E also extend upwardly a sufficient distance to engage one of the stays or guys by which the sweeps are supported, thus acting as a stop to prevent the lever from swinging downward any farther than to an approximate perpendicular position, as clearly illustrated in Fig. 3.

Upon the downstream end of the float is placed an inclined apron A⁴, which is so located as to engage the buckets or vanes in the revolution of the sweeps, and thus to cause them to be raised out of the water upon the platform A. To reduce the friction of these parts, rollers e may be attached to the lower ends of the bars E. While the sweeps are passing over the platform A the weight of the buckets is carried by the sweeps and by the wheels or rollers e. These buckets will be supported in this manner until they reach the

upstream end of the float, when they will drop off the end of the float and be engaged by the water and swung downward to the vertical position. When it is desired to throw the buckets permanently out of use, sufficient additional material is placed in the boxes E' to hold the buckets raised.

To the lower end of the shaft B is secured a bevel-gear K, which meshes with a bevel-gear L, mounted upon a horizontally-extending shaft M, which is journaled in suitable supports upon the platform. This shaft is close to the platform and is covered by two inclined boards N, which permit the rollers e to ride smoothly over the shaft. The power is thus communicated away from the main shaft to any point desired. In large devices of this sort the mast may also be provided with an elevated platform H, which will accommodate people, who will thus have a good opportunity to view the scenery. A canopy or covering J may also be provided at a short distance above this. I have also shown cross-bars I' secured to the shaft at an elevation slightly above the platform H and at their outer ends supporting baskets or seats I, which may also be occupied by sight seers.

The mast is provided with braces B², which thoroughly stiffen it and help to support the platform H. To the downstream end of the float is secured a rudder R, which may be placed at such an angle as necessary to overcome the swinging tendency of the sweeps upon the float. It is evident that my device may be used in tidal currents as well as in rivers, the only requisite being a current of water.

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

1. A current-motor, comprising a float having a post at one edge, the mast mounted to turn upon said post, a series of sweeps or rotating arms extending from the mast over the float and water, stays extending from the upper part of the mast to the outer end of the

sweeps, levers pivoted upon the sweeps, and carrying buckets or vanes adapted to drop into the water, said levers extending above the sweeps to engage the stays as stops limiting their swing in one direction to a vertical position, the upper ends of said levers having boxes thereon adapted to receive counterbalance-weights whereby the vanes may be balanced or permanently raised, and an incline extending downward from the float into the water and engaging the vanes to raise them out of the water, the lower edges of the vanes having rollers thereon engaging the platform and float and supporting the vanes during one-half of their revolution, substantially as specified.

2. A current-motor, comprising a float having a post at one edge, a mast mounted to turn upon said post, a bevel-gear secured to the lower part of the mast, a horizontal power-shaft journaled on top of the float and having a beveled pinion meshing with the bevel-gear, a series of sweeps or radiating arms extending from the bottom of the mast over the float and water, stays extending from the upper part of the mast to the outer ends of the sweeps, levers pivoted upon the sweeps and carrying buckets or vanes adapted to drop into the water, said levers extending above the sweeps to engage the stays as stops limiting their swinging in one direction to a vertical position, the upper ends of said levers having boxes thereon adapted to receive counterbalance-weights whereby the weight of the vanes may be balanced or permanently raised, and an incline extending downward from the float into the water and engaging the vanes to raise them out of the water, the float acting as a support to keep the vanes out of the water during one-half of their travel, substantially as specified.

ROBERT SALTER THEALL.

Witnesses:

PATTISON F. MCCHENE,
JOHN B. JONES.