(No Model.)

J. E. BELT.

RUNNING WATER MOTOR.

No. 472,467. Patented Apr. 5, 1892.

FIG. 1

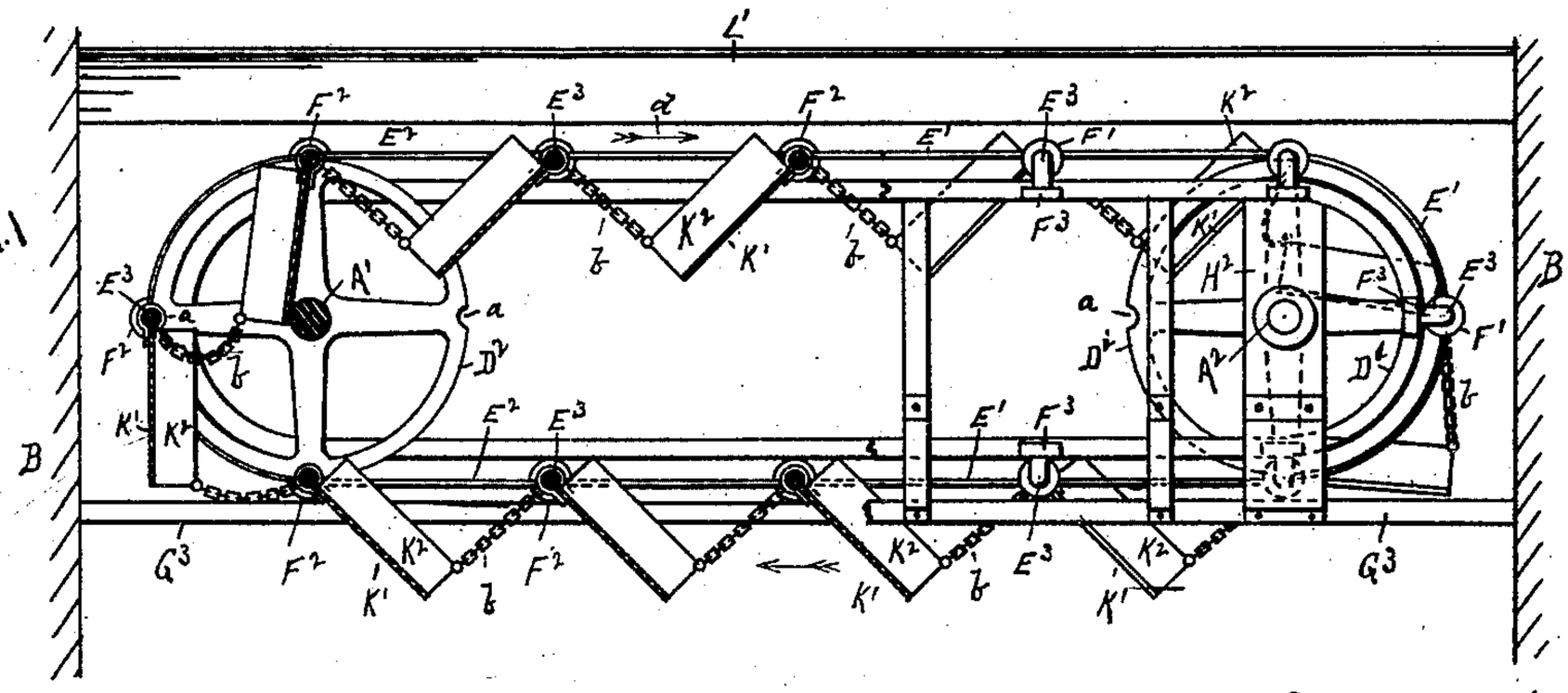


FIG. 2

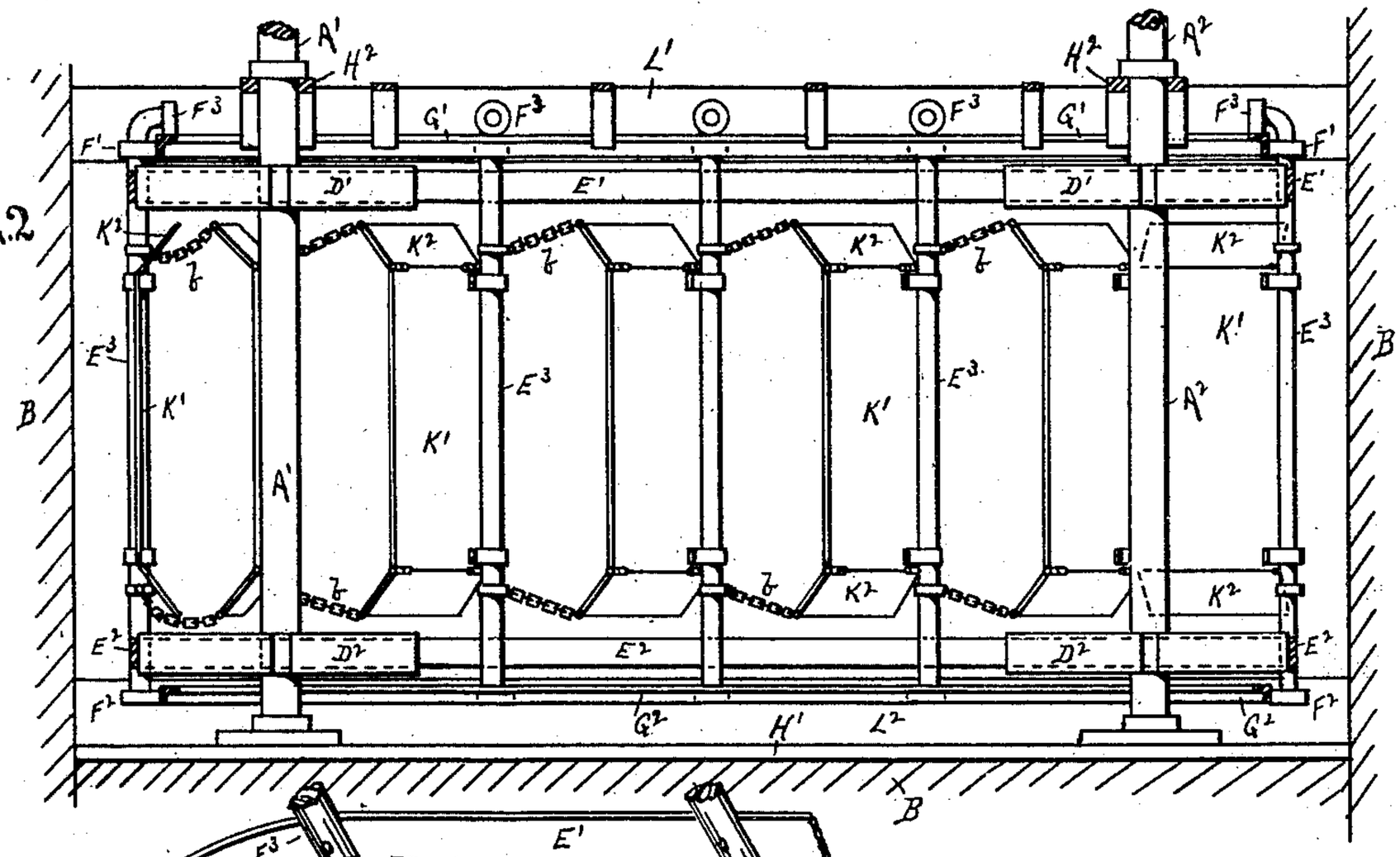


FIG. 4

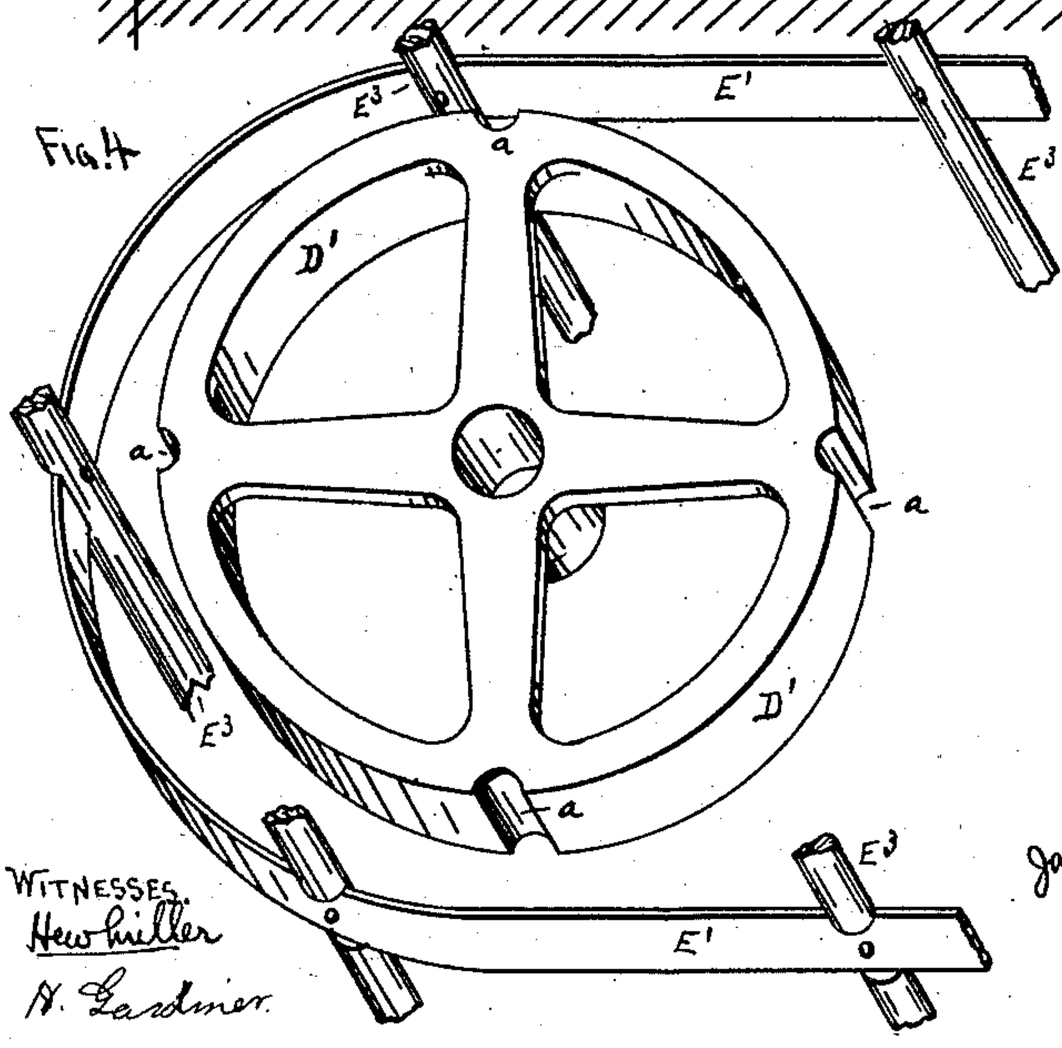
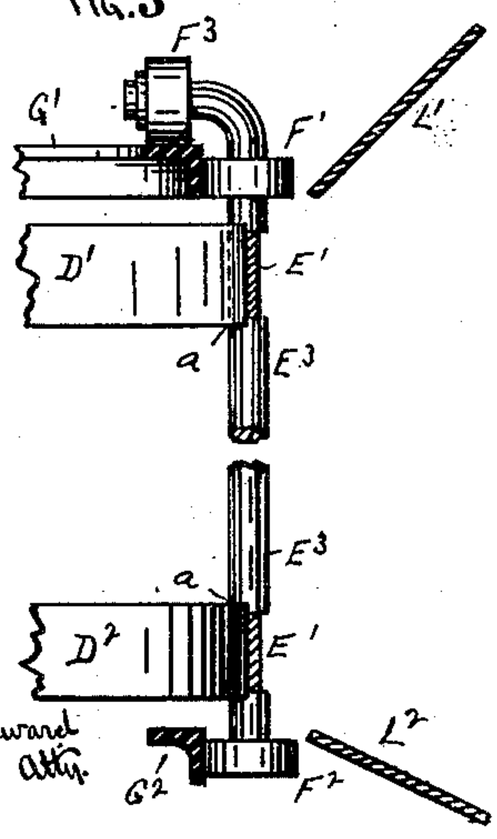


FIG. 3



WITNESSES.
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UNITED STATES PATENT OFFICE.

JARED E. BELT, OF MINNEAPOLIS, MINNESOTA.

RUNNING-WATER MOTOR.

SPECIFICATION forming part of Letters Patent No. 472,467, dated April 5, 1892.

Application filed October 21, 1890. Serial No. 368,836. (No model.)

To all whom it may concern:

Be it known that I, JARED E. BELT, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Running-Water Motors, of which the following is a specification.

This invention relates to that class of motors adapted to be actuated by running water; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claim.

In the drawings, Figure 1 is a plan view, and Fig. 2 is a front elevation. Fig. 3 is a cross-sectional view, enlarged, of a portion of the frame-work and driving mechanism, illustrating more fully the manner of supporting the endless belts. Fig. 4 is a perspective view, enlarged, of one of the carrying-wheels and a portion of one of the driving-belts, illustrating more fully their construction and mode of operation.

The apparatus is intended to be set in the water across a running stream, and consists of two upright shafts A' A^2, suitably mounted in a frame-work at or near the banks of the stream or in a flume constructed for the purpose. For the purpose of illustration I have shown it arranged in such a flume, which is indicated at B. Upon each of the shafts A' A^2 are two pulleys D' D^2, around which endless steel belts E' E^2 pass, as shown. These belts are connected at intervals by cross bars or rods E^3, the ends of the cross-bars projecting above and below the belts and carrying guide-wheels F' F^2 on journals formed thereon to support the wheels. The frame-work for supporting the shafts A' A^2 may be of any suitable construction to resist the strains to which it will be subjected and must contain as one element of its construction guide-rails G' G^2 for the wheels F' F^2. These guide-rails are shown formed of L-iron, which is a preferable form, and each of the rods E^3 is provided with a third bearing-wheel F^3 on its upper end at right angles to the other wheels F' F^2 and adapted to run upon the upper surface of the rail G' to support the endless belts and their attachments and prevent them from sagging.

The rails G' G^2 are formed endless and with rounded ends, so that the wheels F' F^2 F^3 will run around upon them with the motion of the belts, while a third guide-rail G^3 will be arranged across the flume in the rear of the rails G' G^2 to carry the wheels F' F^2 during the passage of the belts across the downstream side.

For the purpose of illustration I have shown the frame-work constructed of a main bed-plate H′, secured to the bottom of the flume B, and in which the shafts A' A^2 are stepped, and with top plates H^2, connected to the upper ends of the shafts. The cross-rods E^3 are connected to the inner surfaces of the steel belts E' E^2, so that a portion projects inward and fits into cavities *a* in the rims of the pulleys D' D^2, so that as the belts are carried around the wheels the rods fit into these cavities and prevent the belts slipping upon the wheels and insuring their preferably even running and keeping the bars and their attachments in perfect parallelism. The cross-rods E^3 are so connected to the belts as to be freely carried with them around the pulleys D' D^2 and will each have a flat plate K' hinged to one edge, as shown. Upon the upper and lower ends of these plates are hinged wing-plates K^2, the outer corners of the latter being connected loosely to the adjacent cross-rods E^3 by chains *b*. The chains *b* will be long enough to permit the plates K' and wings K^2 to stand at an angle to the flowing water, so that the current acting against them will cause them to be moved across the stream, carrying the belts E' E^2 with them, and thus revolving the shafts A'. On the upstream side the belts will be moved in the direction indicated by the arrow *d*, and when the plates K' are carried around the pulleys their positions will be reversed, so that the same water in acting against their reversed sides will cause them to move in the opposite direction, but also on the opposite sides of the belts, so that the force of the current will be utilized twice, first on the plates on the upstream side of the belts and then again on the downstream side. The shafts A' A^2 will be continued upward and provided with gears or other means for transmitting the motion to any machinery which it is desired to operate.

Supported rigidly across the flume B, just in advance of the motor, are two inclined

chutes or guides L′ L², one above and one below the belts E′ E², and adapted to concentrate the water against the motor and increase and intensify the volume of the water flowing against the plates.

Having thus described my invention, what I claim as new is—

A running-water motor consisting of two or more shafts A′ A², having sheaves or pulleys D′ D², belts passing around said sheaves and connected at intervals by cross-bars E³, plates K′, hinged to said cross-bars, wings K², hinged to the ends of said plates and held flexibly in inclined relations to the flow of the water, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JARED E. BELT.

Witnesses:
C. N. WOODWARD,
H. S. WEBSTER.