(No Model.)

L. COLT.

CURRENT WATER WHEEL.

No. 388,531. Patented Aug. 28, 1888.

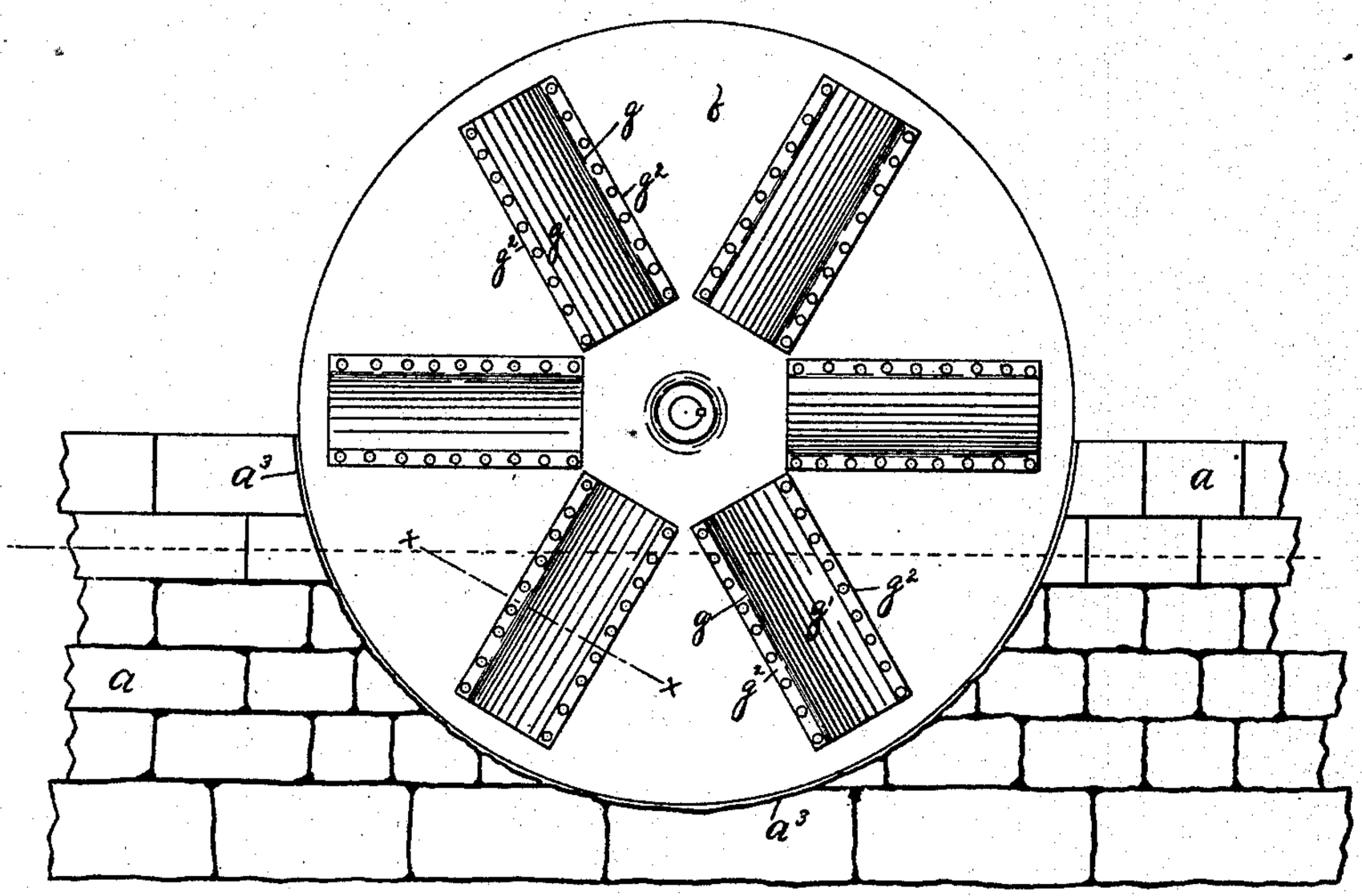

Fig. 1.

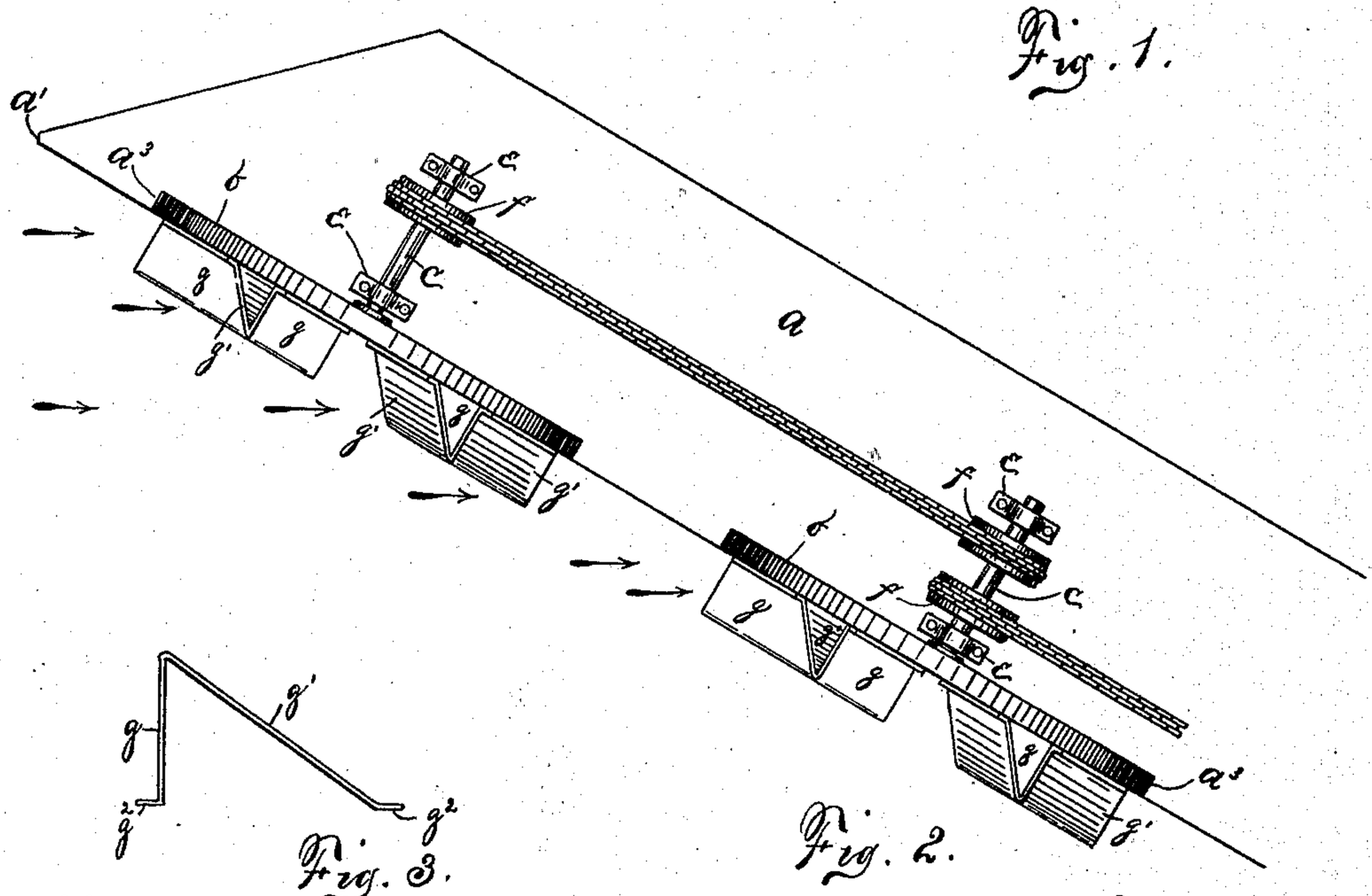

Fig. 2.

Fig. 3.

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CURRENT WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 388,531, dated August 28, 1888.

Application filed January 31, 1888. Serial No. 262,494. (No model.)

To all whom it may concern:

Be it known that I, LEANDER COLT, a citizen of the United States, residing at Suspension Bridge, in the county of Niagara and State of New York, have invented a new and useful Improvement in Water-Wheels, of which the following is a specification.

My invention relates to upright water-wheels.

The objects of my improvements are, first, to construct the wheel for favorably catching a portion of the current in a river or stream to provide power for machinery; second, to place this wheel in a position of advantage for securing power from the weight and momentum of the running water; third, to construct a pier in the current that will support the wheel, and also protect the wheel and aid in concentrating a larger portion of the current against the buckets or paddles and the closed side of the wheel; fourth, to construct the wheel and its paddles or buckets so that floating ice or other obstructions will not clog or easily damage the wheel; fifth, to connect a plurality of these wheels in a way to grasp the current to secure increased power. I attain these objects as illustrated in the accompanying drawings, in which—

Figure 1 is a face elevation of my improved water-wheel as seen on the side of a pier set parallel to the course of the current. Fig. 2 is a top plan view showing two of the wheels as connected in operative position, and how the number may be extended diagonally in the current on a pier provided for that purpose in the stream. Fig. 3 is a section of one of the sheet or plate iron paddles or buckets, taken in the line *x x'* of Fig. 1.

Similar letters refer to similar parts throughout the several views.

The body of the wheel *b* is made with smooth closed sides from circumference to the shaft *c*, to the end of which shaft the wheel is firmly fixed. If, however, the body of the wheel be only closed from its circumference to the inner end of the paddles *g*, it will answer my purpose of co-operating with the front of the paddles or buckets at *g* for catching a favorable weight and force of the current. I prefer to have the body of the wheel made as thin as the strength of the material used will allow. The recess a^3 a^3 in the side of the pier *a* is made for the body of my wheel to work in when the body is thick enough to require the recess. The diagonal pier, Fig. 2, aids to turn more water on the wheel.

In cases where one wheel will give the required power to machinery the side of the pier may run parallel with the course of the current and the wheel revolve in the same direction as at *a* in Fig. 1; but I prefer this wheel to be set a little diagonally across the natural course of the current to receive the water more favorably.

It is shown in Fig. 2 that the side of the pier *a* and the two wheels *b b* are set diagonally, as referred to. The arrows (⟹) show the natural direction of the current and how it will be directed to the closed side of the wheel and onto the paddles' front *g*. The paddles or buckets are bolted or riveted to the smooth body on the side of the wheel, as shown at g^2 g^2. They may be made out of thin plate-iron, long enough to reach from near the circumference of the wheel almost to its hub or shaft. Each paddle or bucket *g g' g² g²* should be bent lengthwise in about the form shown in Fig. 3, with bolt-holes punched in the edges g^2 g^2. The brace side of the paddle or bucket is *g'*, and the current side *g*. The ends of these paddles or buckets may be closed; but I prefer them to be left open for a portion of the current to push against the inside of the brace-back *g'* as far up as the open end will allow.

The shaft of each wheel works in the journal-boxes *e e*. These boxes are to be strong and well fastened to bed-timbers in the pier *a*. The power from the two water-wheels is connected by the chain band over the pulley-wheels *f f;* and by an additional pulley-wheel, in the same manner, the second wheel may be connected to a third wheel, and so on to secure additional power from the current by as many wheels as may be desirable. The shaft of either wheel will thus combine the power which the current gives to all of them. Between these shafts, however, the power may be connected by any well-known mechanical means.

The pier *a* and the wheels *b b* may be constructed of any suitable materials. The up-stream end of the pier should be sharp, as at *a'*, where the current is divided by it. The top of the pier should be safely above high-

water mark, as indicated by the line of short dashes in Fig. 1.

The closed bodies of the wheels *b b* and their positions in recesses a^3 a^3 and the forms of the paddles or buckets all tend to prevent the wheel from being damaged or clogged by floating ice or other substances. The slanting brace-back surface *g'* of the paddle or bucket allows its ascending movement out of the water to be easier made.

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

1. The combination, in a current water-wheel, of the body *b* of the wheel, being a circular thin head or plate having its whole surface on either side flat or level, and being firmly fastened to the shaft *c*, with the paddles, blades, or buckets *g g'*, extending most of the way from the circumference or rim of the body *b* to its center, and made of sheet or plate metal, in the angular form described and shown, *g g'* g^2 g^2, having the projecting front *g* and brace-back surface *g'*, and the bent edges g^2 g^2, and being attached at their edges g^2 g^2 onto the side of the body *b*, in the positions shown, and the shaft *c*, working in journals *e e*, supported on the pier *a*, or other suitable foundation, the wheel-surface *b*, and the paddle or bucket's outer surface, *g*, and a portion of the inner surface of the brace-back *g'*, together being adapted to receive a portion of the current of the river when the wheel is supported, as described, on the shaft *c* at the side of the pier *a*, more or less diagonally in the current of the river, all substantially as and for the purposes set forth.

2. In a current water-wheel, the combination of the pier *a*, having the recess a^3, with the wheel's flat body *b*, working in said recess, and the shaft *c*, on which the body *b* is pinned or fastened, working in journals *e e*, suitably supported on the pier, and the blades or paddles *g g'* g^2 g^2, having the front projection, *g*, and the slanting brace-back *g'*, and being riveted or fastened at their edges g^2 g^2 onto the flat head or body *b*, in the positions shown, and extending from the rim of the body *b* nearly to the shaft *c*, all substantially as and for the purposes set forth.

3. In current water-wheels, the combination of the angular-shaped blades, paddles, or buckets *g g'* g^2 g^2, with the flat thin head or body *b*, pinned upon the end of the shaft *c*, and the shaft *c*, working in journals *e e*, supported on the pier *a*, and the plurality of these wheels connected by any well-known mechanical means, as by the chain band and pulley-wheels *f f* on their shafts *c c*, each wheel having upon the current side of its body *b* the said angular-shaped blades or buckets *g g'*, fastened on at their edges g^2 g^2, and made to reach from the rim of the body *b* nearly to the shaft *c*, and having the front projection surface of the blade or paddle *g* and the slanting brace-back *g'* in form, the body *b* and the paddle's outer surface, *g*, being adapted to receive the current when the wheels are hung at the side of the pier set in a diagonal direction to the course of the current, all substantially as and for the purposes set forth.

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Witnesses:

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