THOMAS LEFFEL.

Improvement in Water-Wheels.

No. 114,571. Patented May 9, 1871.

Fig. 1

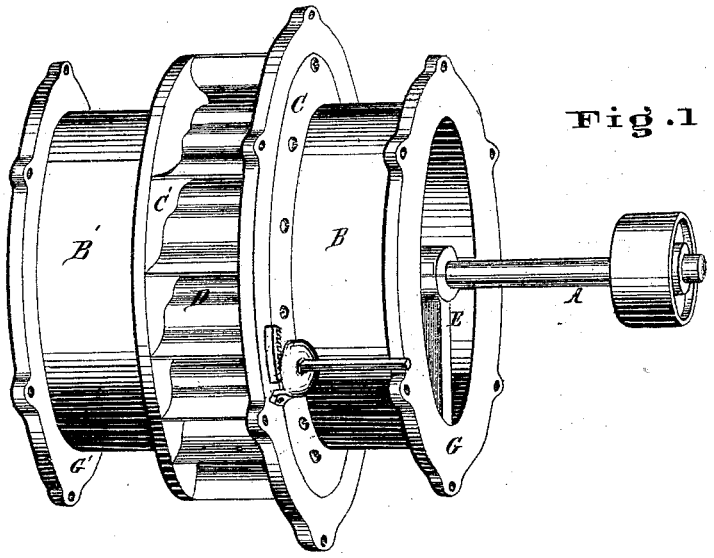


Fig. 2

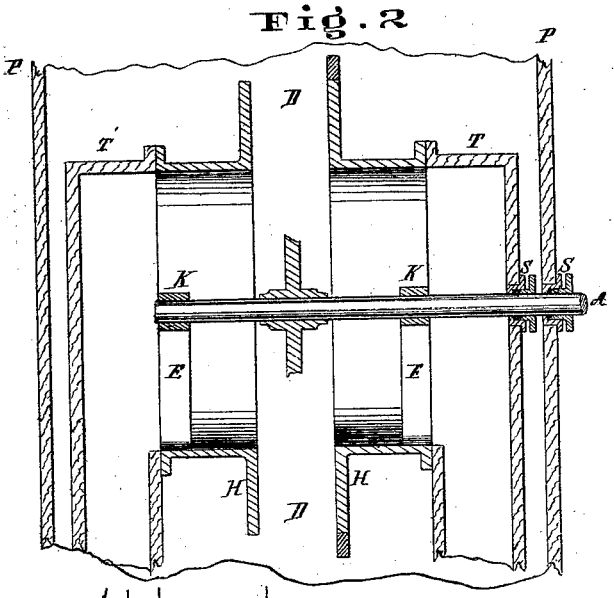
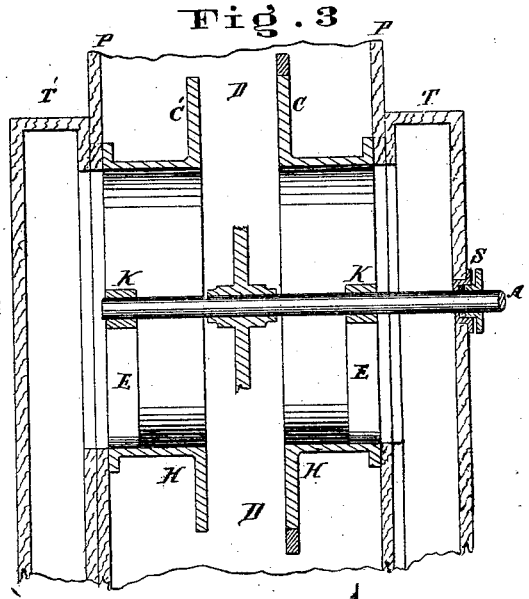


Fig. 3



Attest

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THOMAS LEFFEL, OF SPRINGFIELD, OHIO, ASSIGNOR TO BARNETT, HERRMAN & CO., OF DAYTON, OHIO.

Letters Patent No. 114,571, dated May 9, 1871.

IMPROVEMENT IN WATER-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

I, THOMAS LEFFEL, of Springfield, in the county of Clark and State of Ohio, have invented a new and useful Improvement in Water-Wheels, of which the following is a specification.

Nature and Objects of the Invention.

The nature of my invention relates to the construction of a case for a water-wheel by means of which a wheel adapted to be used as a horizontal or turbine water-wheel may be fitted to the pen-stock upon a horizontal shaft and operated as a vertical wheel, and the water all allowed to be discharged from the wheel through the opposite ends of the case and carried off by proper draught-tubes; and consists in constructing the case in such a manner that the draught-tubes may be readily attached to it and the pen-stock at either end, and so that the wheel can be removed from the case at either end by removing only one of the draught-tubes, without disturbing the setting of the case.

This invention further consists in constructing the case for a water-wheel in sectional parts, which are connected together by means of screw-bolts, so that, after the wheel and case are attached to the draught-tubes and pen-stock, the sectional parts may be removed for repairs or adjustment without removing the wheel-case and draught-tubes entire.

Description of the Accompanying Drawing.

Figure 1 is a perspective view of the case and wheel.

Figure 2 is a vertical section through the center of the wheel, case, and tube, set in the pen-stock.

Figure 3 is another plan of fig. 2, showing a different setting of the wheel in the pen-stock.

General Description.

A is the shaft upon which the wheel is hung.

B B′ are cylinders, connected by bolts to the chutes D, and unitedly forming the case which incloses the wheel.

G G′ are flanges for attachment to the draught-tubes.

C C′ are flanges for attaching the cylinders B B′ to the chutes D.

The construction and operation of the chutes D are fully described in Letters Patent granted me January 1, 1869.

E is a bridge, secured to the case by bolts, and to which are attached journal-boxes, *k*, for the shaft A to work in.

P P is the pen-stock, in which the wheel is set.

H H show the proper place to put shores or studs attached to the bottom of the pen-stock, and made to extend up to the point where it is desired to place the wheel, and are used to relieve the sides of the pen-stock tubes from the weight of the wheel and case.

T T are draught-tubes, and may be of metal or wood, and can be made square and secured to the flanges G G′ by bolts.

S S are stuffing-boxes, to prevent the escape of water around the shaft.

Fig. 2 shows the wheel inclosed in a pen-stock, with the draught-tubes T T inside of the pen-stock, and is a convenient mode of setting in an old pen-stock which is too large for the wheel.

Fig. 3 is the preferred plan, as it enables the wheel to be removed at either end by taking out one of the tubes T and removing the bridge E and journal K.

The case also, being made by bolting several parts, can be removed in sections without disturbing the remainder, setting on shores placed under the case H H, as described.

The joints of the pen-stock P P and the tubes T T should be water-tight, and extend down into the tail-water.

The water enters through the chutes D and is discharged through the tubes T T, as indicated by arrows.

The construction of the wheel adapted to be used in the case is fully described in Letters Patent granted me January 16, 1868; any similar wheel, however, may be employed in its stead.

Claims.

I claim as my invention—

1. A wheel-case composed substantially of the cylinders B B′, flanges C C′ and G G′, chutes D, and bridge E, adapted to be used upon a horizontal shaft, as set forth.

2. In combination with the above, the detachable draught-tubes T T, constructed and arranged in the pen-stock, substantially as set forth.

THOMAS LEFFEL.

Witnesses:

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I. D. SHARON.