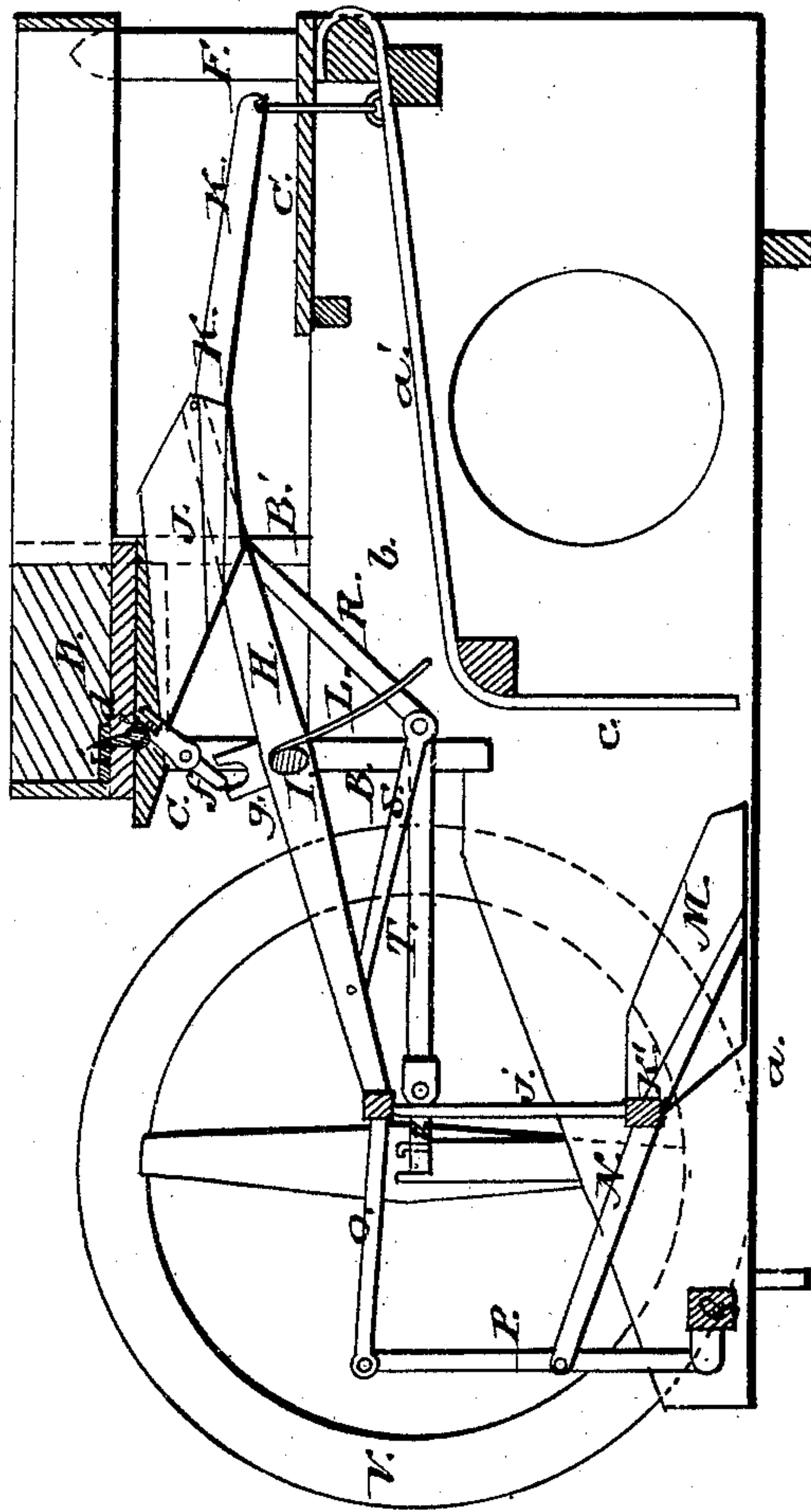


A. S. Lineback,

Water Power.

No. 94,759.

Patented Sept. 14, 1869.



WITNESSES:

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United States Patent Office.

ALFRED S. LINEBACK, OF STOCKTON, UTAH TERRITORY.

Letters Patent No. 94,759, dated September 14, 1869.

IMPROVEMENT IN WATER-POWER.

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

To all whom it may concern :

Be it known that I, ALFRED S. LINEBACK, of Stockton, in the county of Tooele, and Territory of Utah, have invented a new and useful Improvement in Water-Power Apparatus; and I do hereby declare the following to be a full, clear, and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains, to fully understand and use the same, reference being had to the accompanying drawing, forming part of this specification, and in which my invention is represented by a longitudinal central section.

My invention is a machine or apparatus for economizing water-power, or increasing the effect of water in driving machinery.

In this machine, the water runs from the fountain-flume into a trough situated at right angles to the flume.

In the bottom of this trough is made an opening, which is alternately opened and closed, by means of a valve or slide automatically operated. The water flows through this opening into a bucket, which is centrally hung between uprights.

By the weight of the water, this bucket is carried down, so that its contents are emptied into another pivoted receptacle connected with the first, which discharges the water, finally, in the tail-race. The upper bucket is connected, by means of a crank and pitman, with a shaft, so that the latter is rotated, and becomes the driving-shaft of a mill or other machinery.

My invention will be fully understood by reference to the accompanying drawing, considered in connection with the following description.

An excavation is first dug, the bottom of which may be represented at *a a'*, and the sides by *b*. The bottom is paved, and the sides are built of masonry.

A stone wall, represented by *c*, is a continuation of the inclined bottom *a'*, and connects the same with the horizontal bottom *a*.

B B' are standards rising from the side walls *b*, two at each side, and connected together at the top by cross-pieces *C C*. On these latter rests a transverse trough or flume, *D*.

E is a flume, entering the side of trough *D*, and supported at a short distance therefrom by uprights *F F*, rising from a partial covering, *G*, placed across the tops of the walls *b b*.

In the bottom of trough *D* is made a longitudinal opening, *d*. In this slot is hung an eccentric rock-shaft, *e*, one journal of which forms a crank, and projects at the end.

Connected with the eccentric rock-shaft, in any suitable manner, is a slide, *i*, made slightly larger than the opening, so as to cover it.

f is an arm pivoted to one of the standards *B*, and

having an open slot in its upper part, to receive the crank-journal of the rock-shaft.

Between the front standards *B B* is hung a frame, composed of two side-pieces, *H H*, connected together by a central cross-bar, *I*, the ends of which form journals, resting in bearings formed in the uprights *B B*.

On one side-piece, *H*, is fastened a block, *g*, having a hollow in its upper end, which receives the lower end of arms *f*.

J is a bucket, having an inclined bottom, as shown, and attached to a cross-shaped frame *K*.

In the ends of the cross-piece of this frame are fixed journals, which rest in open bearings in the ends of pieces *H H*.

The rear portion of frame *K* is fastened down by a link, and an opening is made in the partial cover *G* of the excavation, to permit the passage of the part *k*.

L represents a curved apron, as wide as the bucket *J*, and attached to the cross-bar *I*.

M represents another bucket, similar to that above described, and attached in the same manner to a cross-shaped frame, *N*, the part *k'* of which has journals in its ends.

Connected with these journals are links *j*, hooked at their upper ends over the journals of a T-shaped piece, *O*, which journals rest in bearings in the ends of the side-pieces *H H*.

The outer ends of the cross-shaped frame *N*, and T-shaped piece *O*, are connected by means of pivots with a vertical lever *P*, which at its lower end is pivoted to a cross-beam, *Q*, as clearly shown.

R is an inclined arm, attached to the under side of one of the side-pieces *H*, and held securely by means of an inclined brace, *S*.

T is a pitman, connecting the arm *R* with a crank-shaft, *U*, on which may be mounted a fly-wheel, *V*.

This shaft may become the drive-shaft for any machinery.

Having described the construction of my apparatus, I will now state its mode of operation.

The water which drives the apparatus flows along the supply or fountain-flume into the cross-flume *D*, and the machine, having been set in motion by hand or otherwise, the slide *i* is operated back and forth, alternately opening and closing the passage *d*.

Through this latter the water falls at intervals into the upper bucket *J*, which, by the weight of the water, is carried down past the apron, which prevents its contents wasting, and elevating the bucket *M* until they nearly meet, when the contents of bucket *J* are emptied into the lower bucket, which is thereby depressed, thus elevating the upper bucket for a new supply, while the water contained in the lower bucket is discharged into the tail-race.

Thus the operation continues, the slide *i* only allow-

ing the passage of water when the bucket is up under it, as shown.

A rocking motion of the frame H H I is thus produced, which is transmitted, by means of the connections, to the crank U, and there converted into rotary motion.

It will be seen that in this machine the water is twice utilized, and, operating as it does, by its weight, on nicely-adjusted buckets in a swinging frame, its power and effect are much increased, and a very economical apparatus produced, as a small head of water acting on both buckets will produce the desired result.

I may here call attention to the fact that the above-described machinery may be duplicated below the point where the lower bucket empties, making connection upon the crank at right angles, thereby utilizing the same water at four points.

My apparatus is both simple and practical, and its advantages will be obvious to those acquainted with this class of hydraulics.

Having thus described my invention,

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

1. The combination of the buckets J M, oscillating frame H I, apron L, and a regulator-valve, i, all operating substantially as and for the purpose herein set forth.

2. In combination with the above, the lever P, piece O, and link j, substantially as and for the purpose described.

ALFRED S. LINEBACK.

Witnesses:

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H. GARRETT.