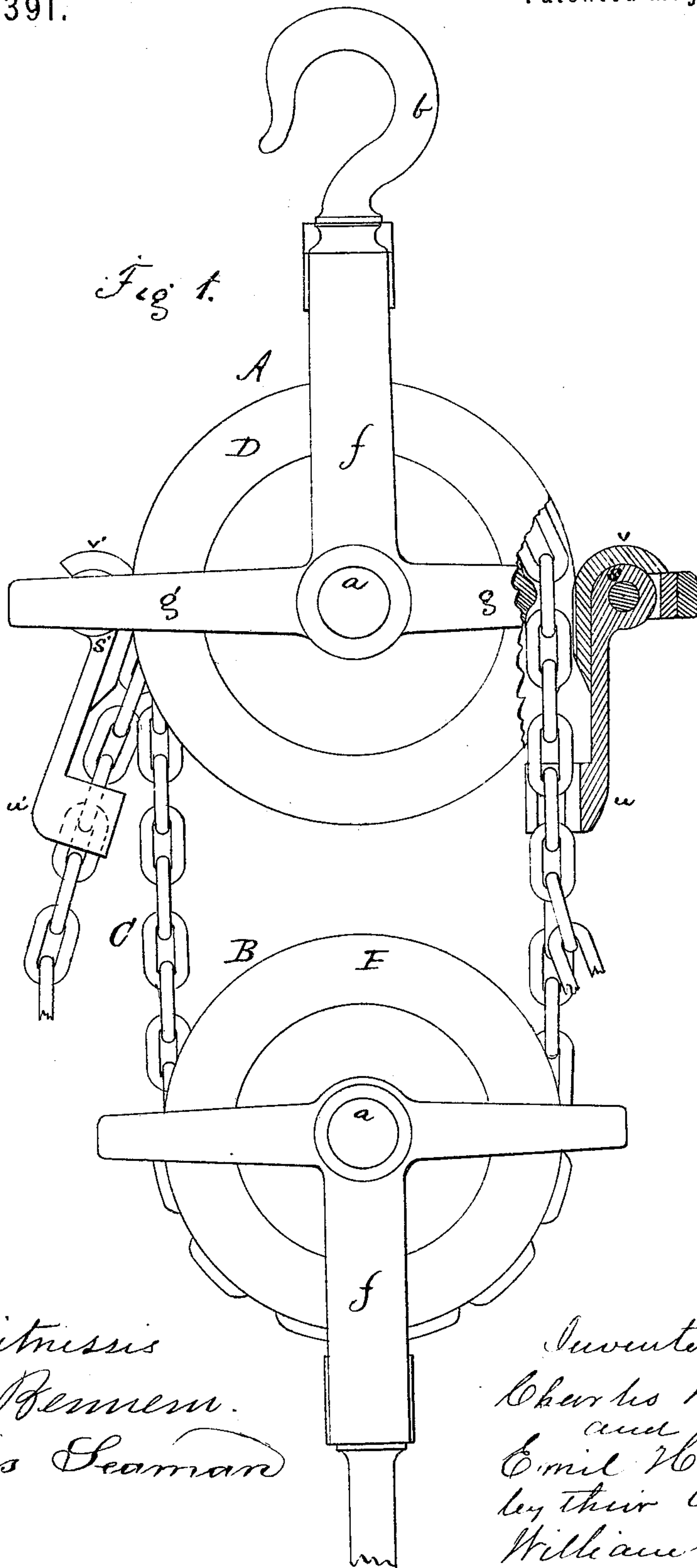


C. HALL & E. HÜBNER.
Improvement in Differential Pulley-Block.
No. 126,391. Patented May 7, 1872.



Witnesses
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Louis Seaman

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and
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by their atty
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Fig 2.

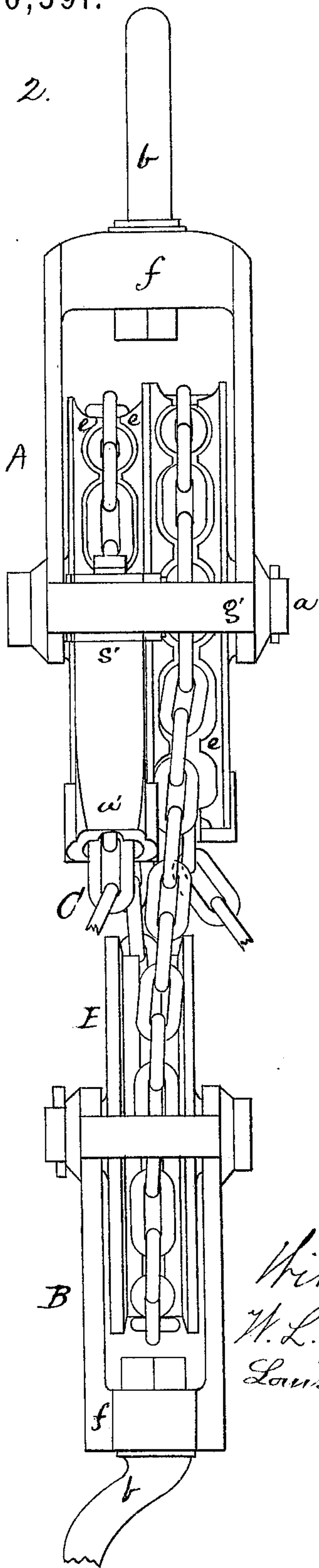


Fig 3.

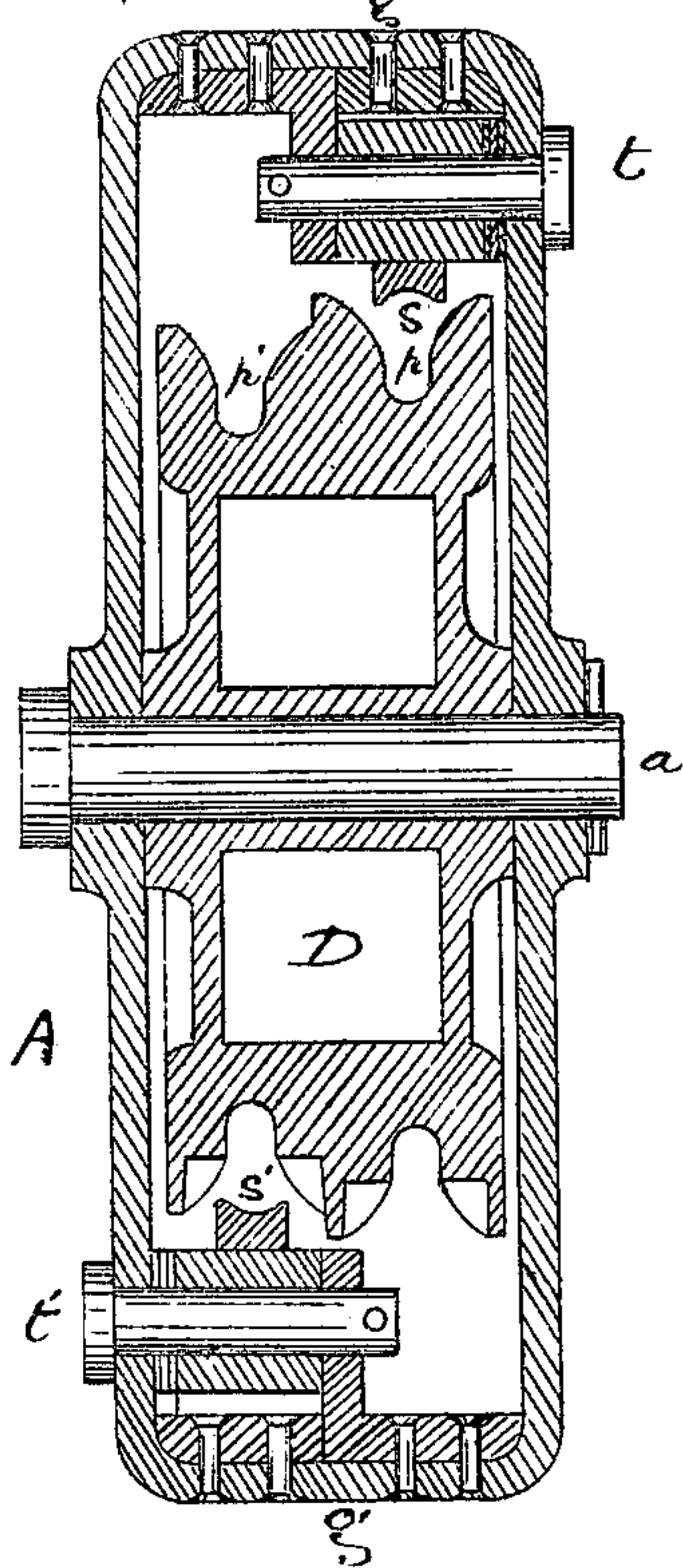
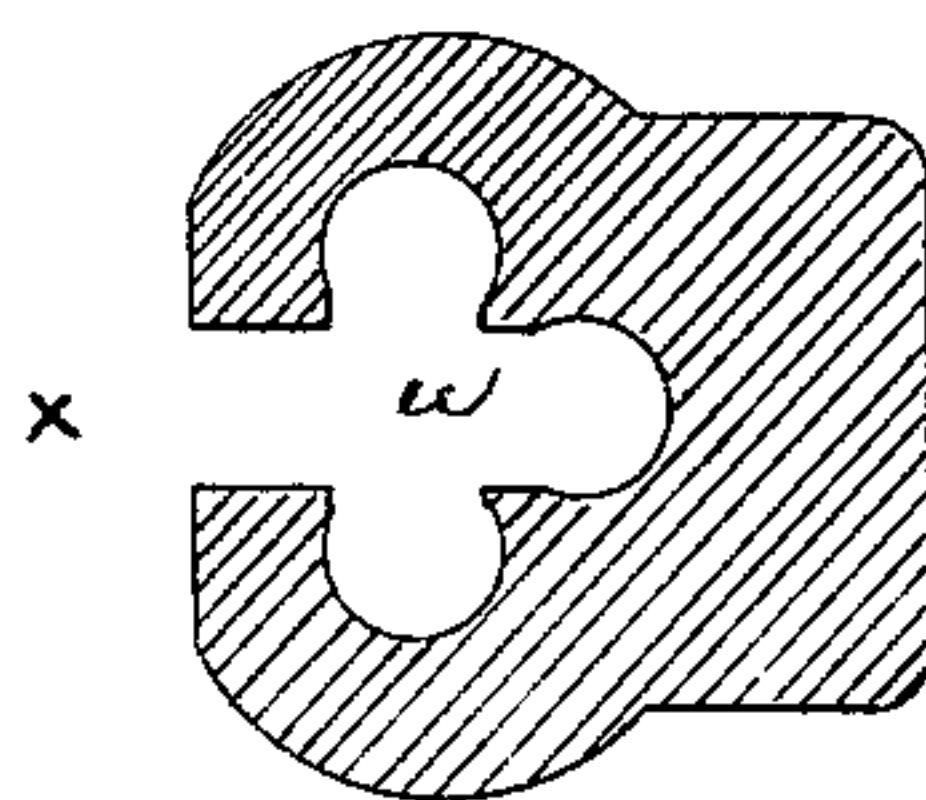


Fig 4



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UNITED STATES PATENT OFFICE.

CHARLES HALL AND EMIL HUBNER, OF NEW YORK, N. Y.

IMPROVEMENT IN DIFFERENTIAL PULLEY-BLOCKS.

Specification forming part of Letters Patent No. 126,391, dated May 7, 1872.

To all whom it may concern:

Be it known that we, CHARLES HALL and EMIL HUBNER, both of the city, county, and State of New York, have made an invention of certain new and useful Improvements in Differential Pulley-Blocks; and that the following is a full, clear, and exact description and specification of the same.

This invention relates to pulley-blocks using short-link chain, which requires the sheaves to be grooved, so that the alternate links of the chain may lie flatwise upon the cylindrical peripheries of the pulleys, the edges of the intermediate links being received in the grooves.

The objects of the invention are to prevent the twisting of the chain as its links operate upon the sheave of the upper pulley-block, and also to prevent the accidental displacement of the chain from the grooves of the sheave of said block. To these ends, the invention consists of certain combinations of mechanical devices, which are set forth specifically at the close of this specification; and, in order that the invention may be fully understood, we have represented in accompanying drawing, and will proceed to describe, a set of differential pulley-blocks embodying it.

Figure 1 of said drawing represents a side view of the set of pulley-blocks. Fig. 2 represents an edge view of the same. Fig. 3 represents a horizontal section of the upper block; Fig. 4, a horizontal section through the cruciform part of the swinging guide-block *s* at *w*.

The set of blocks consists mainly of the upper differential pulley-block *A*, the lower pulley-block *B*, and the short link-chain *C*, by which they are connected. The upper block *A* is fitted with a differential grooved sheave having peripheries of two different diameters for two members of the chain, the grooves being formed with lateral projections, as at *e*, so as to take a firm hold of the chain. It is also constructed to turn upon a pin, *a*, which is connected with swivel-hook *b* by means of the frame *f* of the block. The frame *f* is provided with arms *g g'*, which embrace the sheave, and hold the swinging guide-blocks *s s'*, jointed to said arms at the pins *t t'*, by means of which the chain is guided properly to the grooves of the sheave, and prevented from being displaced therefrom. One swing-

ing guide-block *s* serves as a guide to the chain when entering the groove *p* having the largest diameter, and the other swinging guide-block *s'* serves as a guide to the chain when entering the groove *p'* having the smallest diameter. They are placed on opposite sides of the pulley-block; but it is not necessary, however, that they should both be placed on the same plane passing through the center-pin *a*, and they may be located at any desired angle with said plane. The swinging blocks *s s'*, Fig. 1, are each provided with a cruciform groove corresponding with the size and shape of the links of the chain, as shown at *u u'*, Fig. 4, which may be entirely inclosed, or may be open on one side, as shown in the drawing. Each swinging block has also a grooved projection, *v* and *v'*, partly curved and partly straight, the curved portion being in a circle, of which the center of the pin *t* and *t'* is the center. The cruciform grooves of the swinging blocks guide the chain, so that it may be properly presented to the grooves of the sheave, and the projections *v v'* prevent any displacement after the chain is in the grooves.

Instead of the projections *v v'*, grooved pulleys may substituted, revolving on the pins *t t'*.

Having thus described a set of differential pulley-blocks embodying our invention, we declare that we are aware that differential pulley-blocks have been constructed with toothed wheels and with cylindrical rollers for holding flat chain-bands in engagement with the teeth of such wheels; and that Letters Patent have been issued to CHARLES HALL for two different constructions of differential pulley-block guides.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of a grooved chain-sheave and a block-frame with a swinging guide-block, substantially as before set forth.

2. Also, the combination of a grooved chain-sheave, having two chain-grooves of different diameters, and a block-frame with two swinging guide-blocks, one for each chain-groove, substantially as before set forth.

CHARLES HALL.
EMIL HUBNER.

Witnesses:

GEORGE HALLETT,
JOHN VAN HENNICK, Jr.