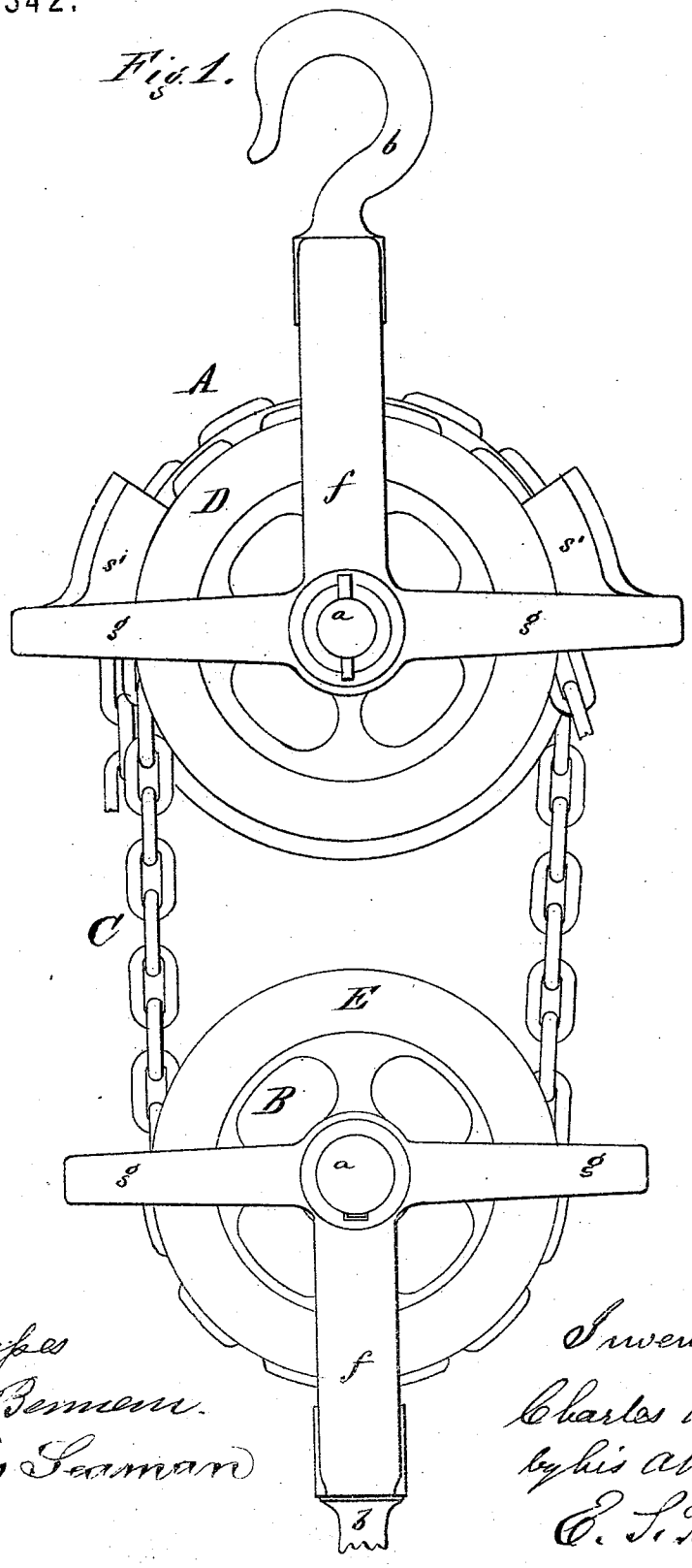
3 Sheets--Sheet 1.

CHARLES HALL.

Improvement in Differential Pulley Blocks.

No. 123,342. Patented Feb. 6, 1872.

Fig. 1.



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3 Sheets--Sheet 2.

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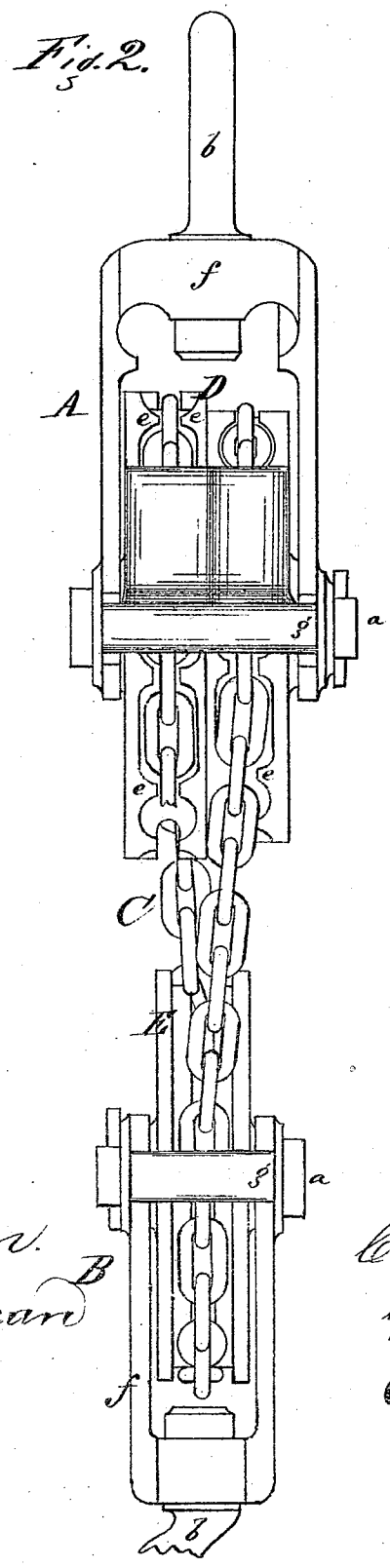
Fig. 2.



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3 Sheets--Sheet 3.

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Fig. 3.

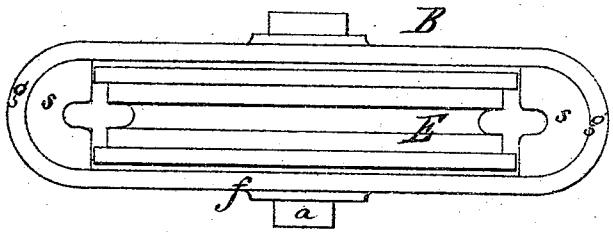
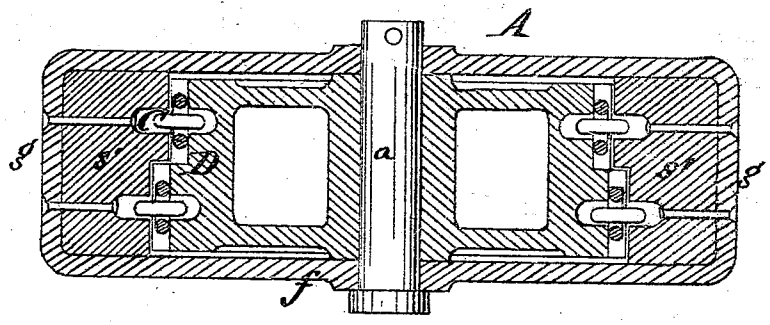


Fig. 4.



Witnesses.
W L Bennem
Louis Seaman

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Charles Hall
by his Atty.
C. L. Kenwick

UNITED STATES PATENT OFFICE.

CHARLES HALL, OF NEW YORK, N. Y.

IMPROVEMENT IN DIFFERENTIAL PULLEY-BLOCKS.

Specification forming part of Letters Patent No. 123,342, dated February 6, 1872.

To all whom it may concern:

Be it known that I, CHARLES HALL, 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 lay 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 sheaves, and also to prevent the accidental displacement of the chain from the grooves of the sheaves. 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, I have represented in the 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 top view of the lower pulley-block. Fig. 4 represents a horizontal section of the upper block.

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. Both blocks A B are fitted with grooved sheaves, D and E, the grooves of the sheave of the upper block A being formed with lateral projections, as at *e*, so as to take a firm hold of the chain. Each sheave is 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 of each block is provided with arms *g g*, which embrace the sheave and hold guide-blocks *s s'*, by means of which the chain is guided properly to the grooves of the sheaves and is prevented from being displaced therefrom. The lower block B in this example is provided with two guide-blocks, *s s'*, Fig. 3, which are grooved at their inner sides to fit loosely upon that part of the chain which protrudes from the pulley-sheave, so that the links cannot twist from their proper positions when entering the grooves of the sheaves. As the sheave of the upper block is a differential sheave, having peripheries of two different diameters for two members of the chain, a corresponding double guide-block, *s'*, is employed to guide those two members to the chain-grooves and to prevent their escape therefrom; and, in the example represented in the drawing, such a double guide-block, *s'*, is placed at each side of the sheave.

It is deemed best to make the cavity or groove in each guide-block slightly flaring at its two mouths so as to facilitate the entrance of the chain.

Instead of arranging a guide-block at each side of each sheave, but one guide-block may be used at one side of a sheave; or, the sheave of the upper block may be fitted with two single guide-blocks, the one fixed at one side of the periphery of larger diameter and the other at the opposite side of the periphery of smaller diameter.

The guide-block or blocks may be made separately from the block-frames and secured to them; or each may be made in one piece with the frame, as found expedient. The form of the frame also may be modified, as found expedient.

Having thus described a set of differential pulley-blocks embodying my invention, I declare that I am 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. I have also received a patent in which lateral-grooved guide-sheaves are described. I therefore do not intend to claim either of the said constructions; but

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

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

2. Also, the combination of the differential grooved chain-sheave and block-frame with a double guide-block, substantially as before set forth.

Witness my hand this 1st day of December, A. D. 1871.

CHARLES HALL.

Witnesses:

VANIAH VAN ZANT,

JAMES D. VAN VOORHIS.