

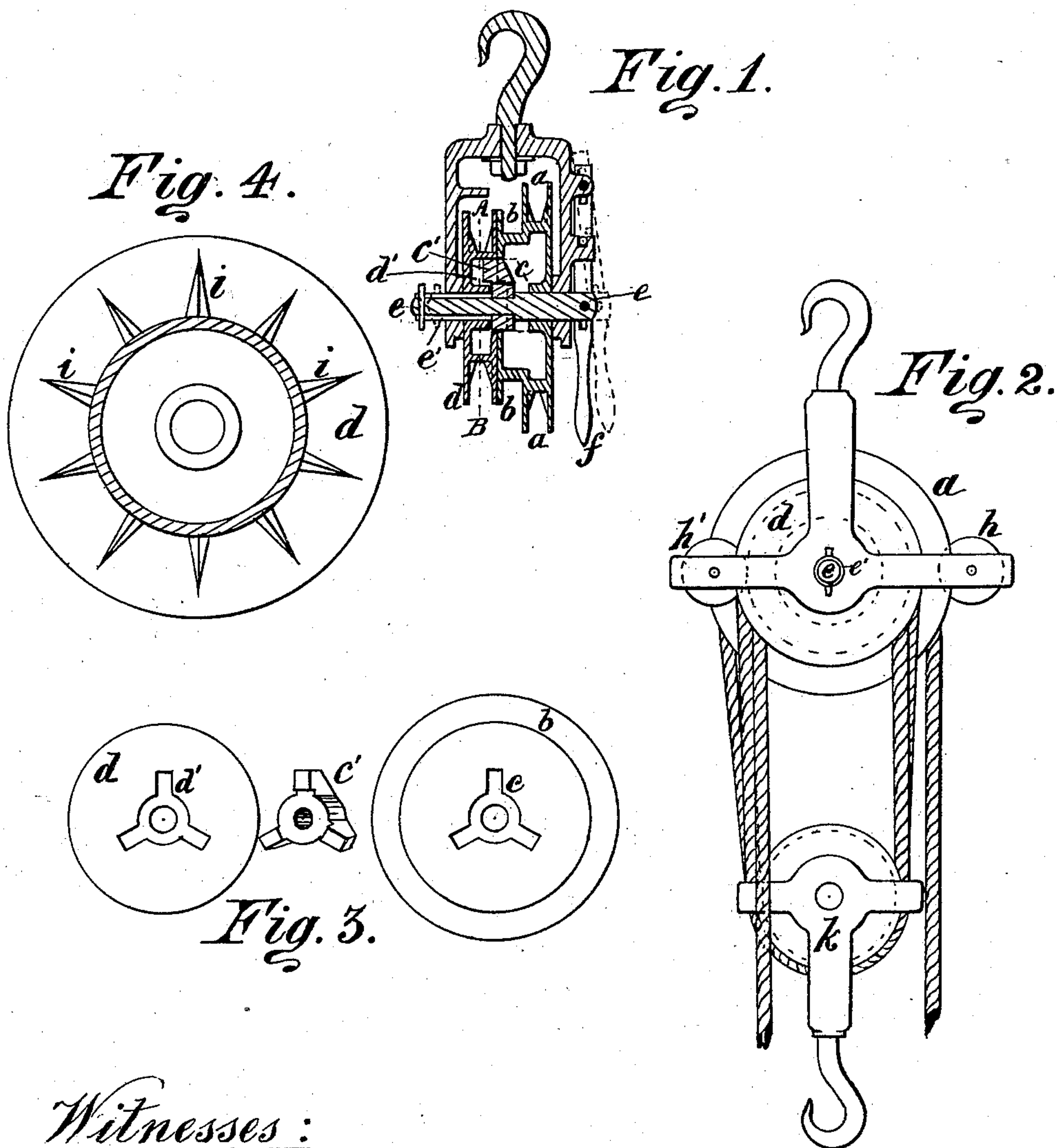
(No Model.)

C. R. JONES.

DIFFERENTIAL BLOCK AND TACKLE.

No. 302,258.

Patented July 22, 1884.



Witnesses:  
Will. H. Davis  
Thomas Edwards

Inventor:  
C. R. Jones  
by J. F. Greenough  
Atty.



# UNITED STATES PATENT OFFICE.

CORNELIUS R. JONES, OF SYRACUSE, NEW YORK.

## DIFFERENTIAL BLOCK AND TACKLE.

SPECIFICATION forming part of Letters Patent No. 302,258, dated July 22, 1884.

Application filed June 13, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CORNELIUS R. JONES, of the city of Syracuse, Onondaga county, State of New York, have invented certain  
5 new and useful Improvements in Differential Blocks and Tackle, of which the following is a description.

The purpose of my invention is to obtain an efficient differential rope tackle and pulleys  
10 that can be changed to an ordinary block and tackle, with loose pulleys that can be quickly overhauled, and again readily changed to differential for heavy lifting, so that it can be used for either purpose and as quickly over-  
15 hauled as an ordinary tackle-block. I also form the grooves of the first and last sheaves with ribs or projections that securely hold the rope from slipping. I attain these objects by the mechanism illustrated in the accompany-  
20 ing drawings, in which—

Figure 1 is a section cut vertically through the block. Fig. 2 is a side view of the block and tackle; Fig. 3, sheaves *b* and *d* detach with clutch *c'*; Fig. 4, section of sheave *d* on  
25 line A B, Fig. 1.

Similar letters refer to like parts in all the figures.

I employ in my improved tackle-block three or more sheaves of different diameters, corresponding with the take-up of the rope, so  
30 as to equalize the strain thereon, for which purpose they are proportioned substantially as follows, which I have found most efficient for practical results. Divide the diameter of the large sheave *a* into ten equal parts, and  
35 make the sheave *d* seven of these parts in diameter. Then divide the three parts of difference between *a* and *d* into five parts, and add three of these to the seven before named  
40 for the diameter of the center sheave, *b*. These sheaves are contained in a shell composed of metal straps, as shown in the drawings, but may be otherwise constructed, if desired. The largest sheave *a* is united with the next sheave  
45 *b*. In the face of the sheave *b*, next the sheave *d*, there is a recess, *c*, formed to receive within it a clutch, *c'*, (see Fig. 3,) having any convenient number of radiating arms, (three are shown in the drawings, but I prefer a greater  
50 number.) Upon the face of the last sheave *d* there is a similar recess, *d'*, into which the

clutch *c'* enters to unite the sheaves, and is withdrawn into sheave *b* to release sheave *d*. Other intermediate sheaves can be added between *b* and *d* to increase the power of the dif-  
55 ferential block and tackle. The sheaves are centered and turn on a pin, *e*, that unites them to the cheeks of the block or side straps. This pin *e* has a movement endwise, governed by a lever, *f*, pivoted to the cheek of the block to  
60 which the pin *e* is connected. The clutch *c'* is held in place by the pin, on which it loosely turns, by means of a shoulder turned on the pin, against which it comes, and is held by a  
65 thimble, *e'*, that is slipped onto the end of the pin, and there keyed, (see Fig. 1,) so that when the pin *e* is moved endwise by the lever *f* the clutch *c'* is moved into or out of the recess *d'* to clutch or relieve the sheave *d*. Opposite  
70 the groove in the large sheave *a* there is a recess in the horizontal strap of the block, that receives a small pulley, *h*, preferably made of some elastic material, which enters the groove of the sheave *a*, to guide and hold the rope in  
75 the groove. A similar pulley, *h'*, is in like manner placed in the groove of the last sheave *d*, for a like purpose.

In the grooves of the sheaves *a* and *d*, above named, there are ribs *i*, placed alternately on each side at intervals to correspond with the  
80 twist of the rope in the tackle used, so as to fit into the intervals between the strands of the rope to secure it from slipping, while they are so formed as to freely deliver the rope from the groove without binding. The lower  
85 block, *k*, is formed, in the usual way, with loose sheaves to correspond with the upper block and carry the bights of the rope. I use in these blocks an endless rope tackle, and for heavy lifting run it off the large sheave onto  
90 the small one, the sheaves of the upper block being clutched together and the power increased by the number of the sheaves united. Thus rigged, the weight lifted will remain suspended at any point it is raised to, and form  
95 a safety-lift.

For quickly overhauling the tackle, the clutch *c'* is removed from sheave *d*, when the blocks can be as readily and speedily drawn  
100 apart as an ordinary double lift tackle. By knotting the rope or otherwise stopping it at the point where it runs onto the small sheave

*d*, when it is unclutched, it becomes an ordinary double block and tackle for light weight and quick hoisting.

Having thus described my invention, I  
5 claim—

1. In a block and tackle, the clutch *c'* and sliding pin *e*, for uniting and detaching the sheaves, as specified, and for the purposes set forth.

10 2. The pin *e*, having a shoulder thereon, the clutch *c'*, and thimble *e'*, constructed as above described.

3. In combination with an endless rope, a differential block and tackle, the ribs in the grooves of the sheaves, as described, taking 15 into the twist of the rope, as specified.

4. In a differential block, the sliding pin *e*, clutch *c'*, and lever *f*, substantially as and for the purposes specified.

CORNELIUS R. JONES.

Witnesses:

J. J. GREENOUGH,  
H. M. CLEMENT.