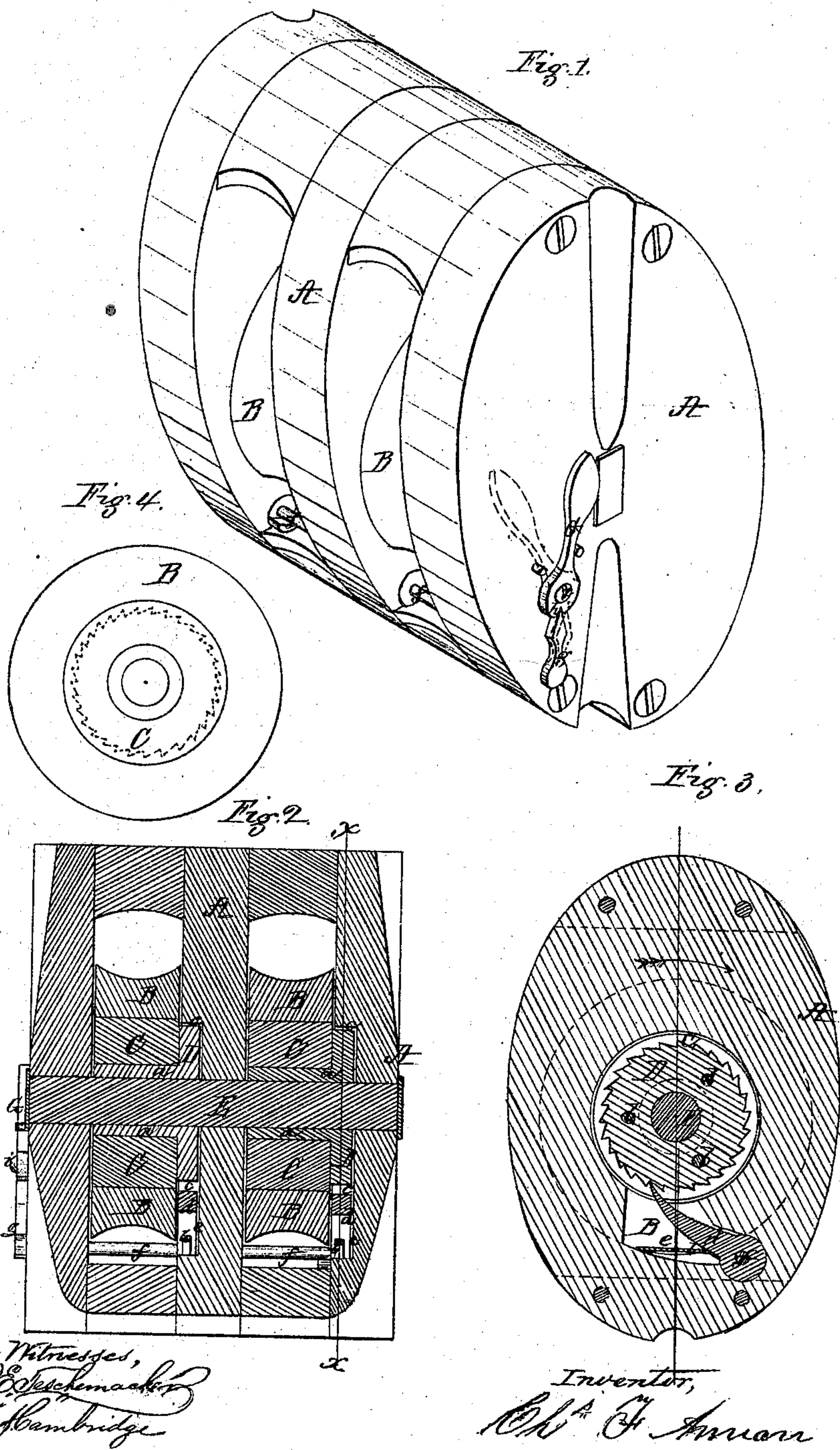


C. F. Annan,
Ships' Block.
No 100,709. *Patented Mar. 15, 1870.*



United States Patent Office.

CHARLES F. ANNAN, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 100,709, dated March 15, 1870.

IMPROVEMNT IN SHIPS' BLOCKS.

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, CHARLES F. ANNAN, of Boston, in the county of Suffolk, and State of Massachusetts, have invented an Improved Pulley Block, of which the following is a full, clear and exact description, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a perspective view of my improved pulley-block.

Figure 2 is a longitudinal section through the center of the same.

Figure 3 is a section through the same on the line *x x* of fig. 2.

Figure 4 is a side elevation of one of the sheaves.

My invention has for its object to produce a pulley-block in which the sheave or sheaves will turn easily in the direction in which they revolve when a load is being hoisted, but with considerable friction in the opposite direction, so that when the load is being lowered the rope will not run so easily, thereby facilitating the operation of lowering, and requiring much less force to sustain the weight of the load than where an ordinary block is employed; and

My invention consists in a sheave made in the form of a ring, within which is fitted a disk or wheel which runs upon the central pin or axle, the disk being provided with a ratchet or toothed wheel, with which engages a pawl, by which it is held stationary when the load is being lowered, so as to compel the sheave to revolve around the disk, the friction between the two serving to prevent the free revolution of the sheave and retard the movement of the rope, while in hoisting the sheave and disk will revolve together, producing no more friction than in an ordinary block.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings—

A represents the block, which is slotted for the reception of the two sheaves B B, over which the rope runs.

Each of these sheaves is made in the form of a ring, and has fitted within it a disk or wheel C, which is bored out at the center for the reception of the projecting portion or hub *a* of a ratchet-wheel, D, which is secured to the face of the disk C by screws *b*, the hub *a* forming a bushing for the opening in the center of the disk, which runs upon the central pin or axle E. When, however, the disk C is of metal, the ratchet-wheel will, of course, be formed in one and the same piece therewith.

The ratchet-wheels D D fit into recesses *c c* in the block A, and are prevented from revolving in one direction by pawls *d d*, working in the recesses *e e*, and secured to a rod, *f*, which extends through to the out-

side of the block, where it has secured to it an arm, *g*, the point of which fits into a notch, *h*, in the end of a lever, G, pivoted at *i* to the cheek or side of the block; and when this lever is moved into the position seen in dotted lines in fig. 1, it will throw the arm to one side, out of the notch, and hold it in this position, thus partially turning the rod and holding the pawls, against the resistance of their springs *6*, out of contact with the teeth of the wheels D, for a purpose which will be hereafter described. Any other suitable device may, however, be employed for operating the pawls *d d*.

When a weight is being raised, the sheave B and disk C will revolve freely together in the direction of the arrow, fig. 3, on the axle E as a center, no more friction being created than in an ordinary block.

When, however, the weight is being lowered, and the sheave is revolved in a direction contrary to the arrow, the disk C is held stationary by its pawl, thus compelling the sheave to revolve around the disk, the friction thus created between the periphery of the disk C and the interior of the sheave B (which will be in proportion to the weight of the load being lowered) serving to retard the revolution of the sheave and the movement of the rope, so that the operation of lowering a load will be greatly facilitated, and much less force be required to sustain its weight than where an ordinary block is employed, thus rendering my invention peculiarly applicable for "falls," especially in situations where there is no opportunity to pass the rope around a beam or cleat, to assist in the operation of lowering.

It is evident that when a number of these sheaves are arranged within a block, the friction will be increased to an extent that will render it easy for one man to lower a very heavy load, while, when the rope is passed around a beam or cleat, the chafing between it and the rope will be much less than with an ordinary block.

In hoisting with an ordinary block, where there is nothing to pass the rope around in "taking in slack," considerable loss is experienced each time a new hold of the rope is taken, owing to its slipping back so easily; but with my improved block much of this loss is avoided, owing to the difficulty with which the sheave revolves when the rope runs back, while in hoisting, one man can hold a weight to raise which requires several men, and a saving in labor is thus effected.

When it is required merely to lower the "fall," no load being attached, the pawls *d d* may be raised and held out of contact with the ratchet-wheels D D by moving the lever G to one side, as before described, when the sheaves will turn freely in either direction on the pin E, as in an ordinary block.

The block A, as well as the sheaves B and disks C, may be made either of metal or wood, as may be found most desirable.

Claim.

What I claim as my invention, and desire to secure by Letters Patent, is—
The sheave B, in combination with the disk C, with

its ratchet-wheel D, or its equivalent, and the pawl d, the whole constructed and applied to a block, substantially in the manner and for the purpose set forth.

CHS. F. ANNAN.

Witnesses:

P. E. TESCHEMACHER,

W. J. CAMBRIDGE.