

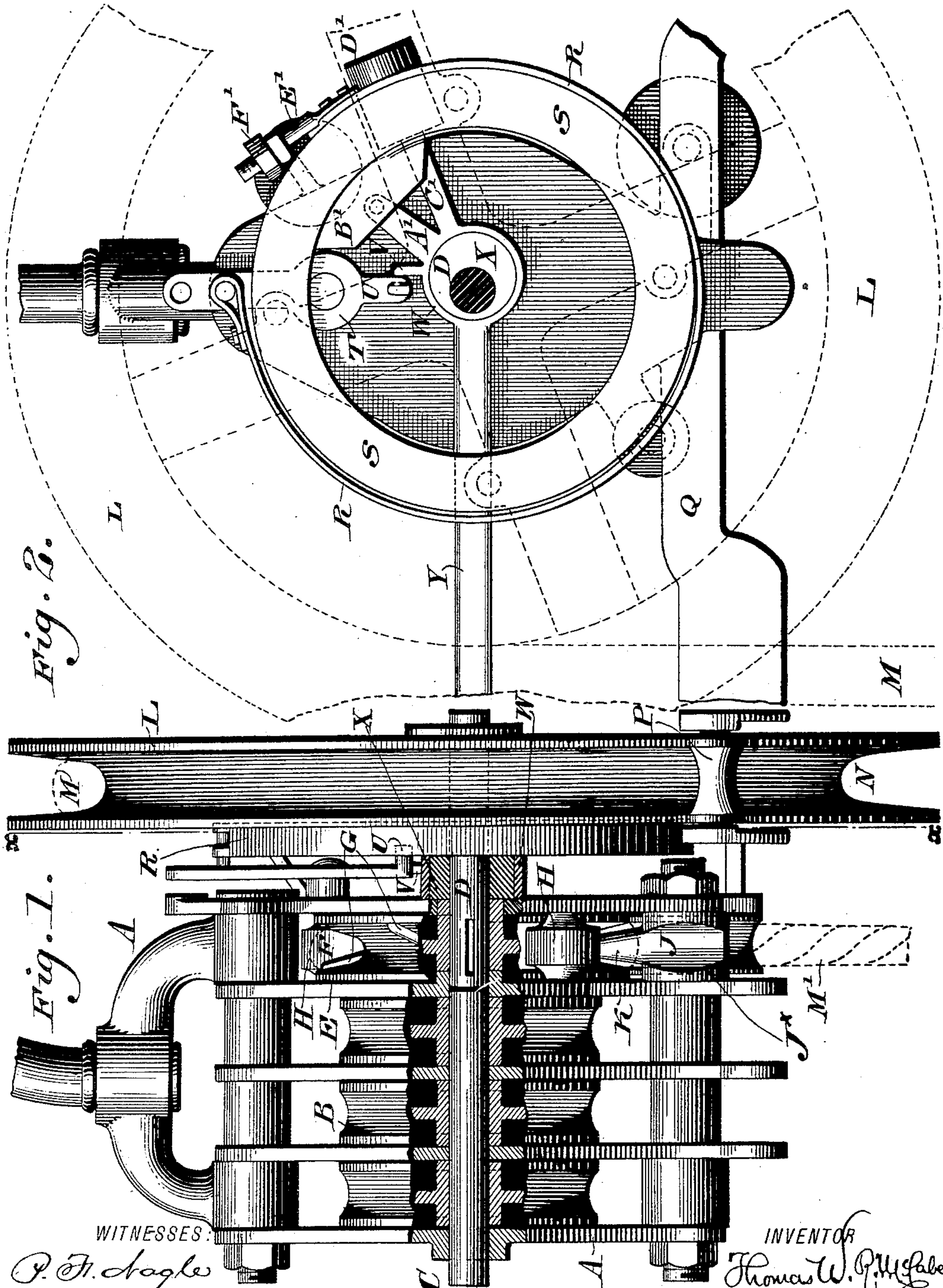
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3 Sheets—Sheet 1.

T. W. R. McCABE.
HOISTING BLOCK AND TACKLE.

No. 462,501.

Patented Nov. 3, 1891.



WITNESSES:
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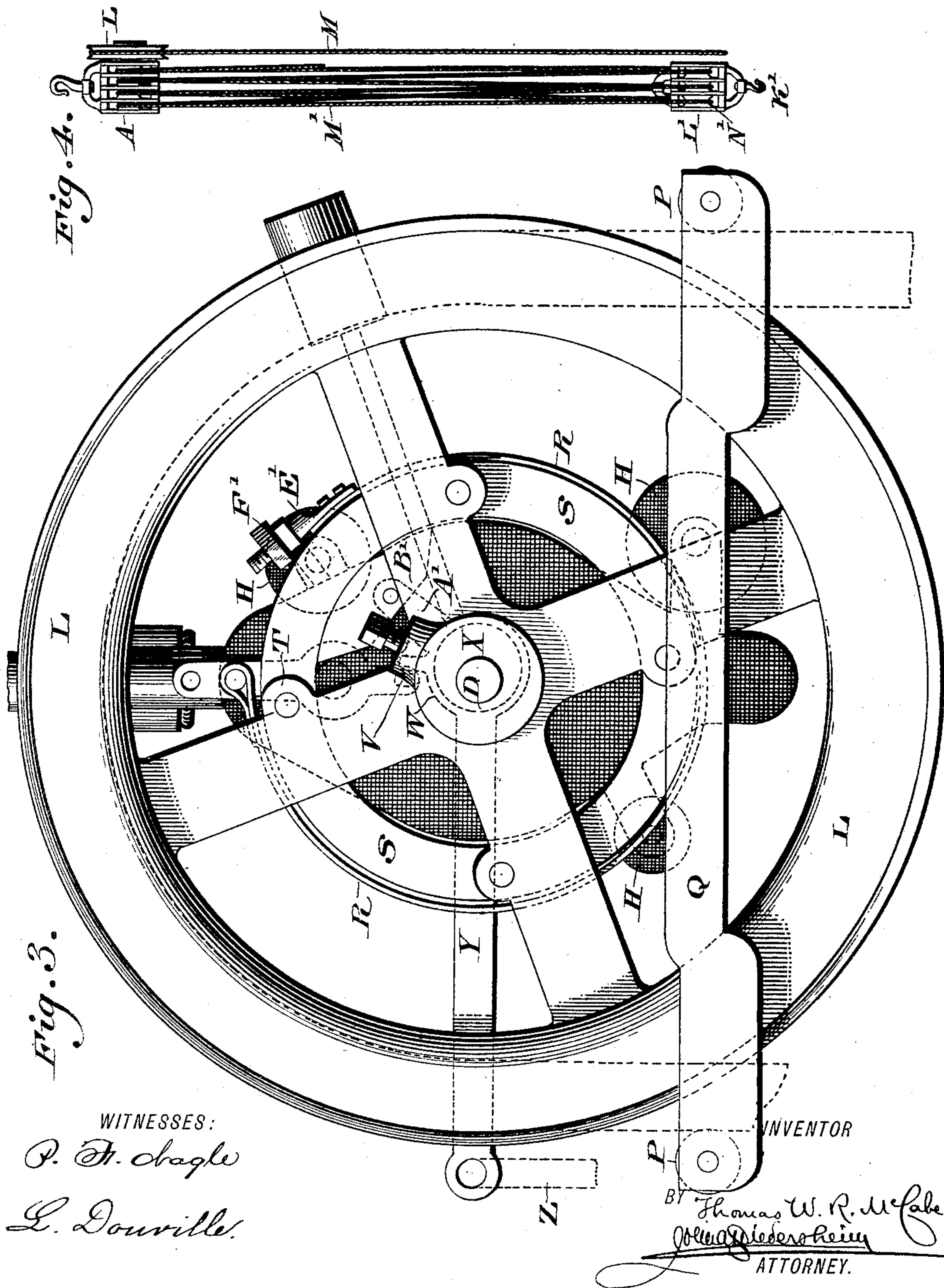
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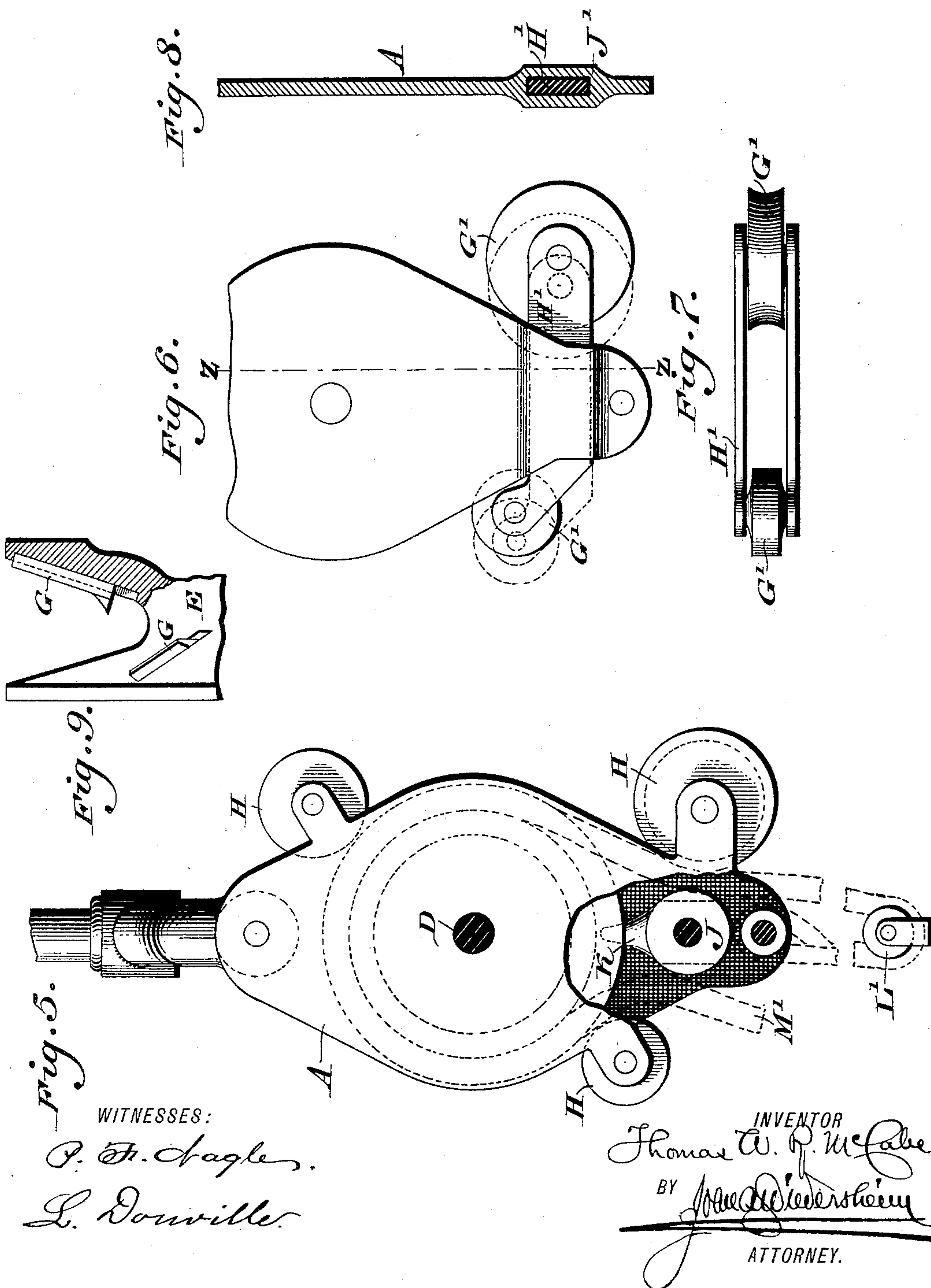
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UNITED STATES PATENT OFFICE.

THOMAS W. R. McCABE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
FANNIE D. ALLEN, OF SAME PLACE.

HOISTING BLOCK AND TACKLE.

SPECIFICATION forming part of Letters Patent No. 462,501, dated November 3, 1891.

Application filed March 26, 1891. Serial No. 386,423. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. R. McCABE, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Hoisting Blocks and Tackles, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in hoisting blocks and tackles; and it consists, first, of mechanism connected with the main pulley-block of the device for imparting increased power or speed to the same without changing the number of ropes of the pulley.

It also consists of novel means connected with a sheave of the pulley-block for preventing the slip of the lifting end of the rope in the block.

It also consists of a novel brake for the power or sheave wheel.

It finally consists of the combination of parts hereinafter set forth.

Figure 1 represents a partial side and partial sectional view of a device embodying my invention. Fig. 2 represents a vertical section on line $x x$, Fig. 1. Fig. 3 represents a side view of a device embodying my invention. Fig. 4 represents a side view of the parts shown in Fig. 1. Fig. 5 represents a side view of the pulley, a portion of the frame being broken away, showing the separator. Fig. 6 represents a view of a modification of the pulley and lower guiding and bending rollers thereof. Fig. 7 represents a plan view of the guiding and binding rollers shown in Fig. 6 with their connecting-bars. Fig. 8 represents a vertical section on line $z z$, Fig. 6. Fig. 9 represents a front view of the sheaves having teeth, on an enlarged scale.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a pulley-block having a series of sheaves B of usual construction loosely mounted on the shaft C. Keyed on a separate shaft D, which is journaled in said pulley-block, and extending in the same direction as the shaft C, is a sheave E, which is parallel with the sheaves B and provided with a groove F in its periphery.

Connected with the inner sides of the walls of the groove F are the teeth G, arranged alternately on each side of the groove and so secured as to have their inner ends adapted to clamp or bind the rope which is in said groove. This is accomplished by fitting the teeth in recesses in the walls of the groove, so that they may move endwise therein and be drawn by the contact of the rope therewith toward the inner portion of the groove. Guiding and binding rollers H H H are journaled on the pulley-block and serve to keep the rope in the said groove F. Below the sheave E, and secured between the partition walls of the block A, is a separator J, having a lug K projecting upwardly into the groove F, so as to prevent the ropes from returning around the sheave. The said separator has on its sides the grooves J^x, permitting the sections of the rope to approach each other.

Secured on the outer end of the shaft D is a power-wheel L, which, as shown, is of larger diameter than the sheave E and is provided with an operating endless rope or chain M, working in a groove N of the said wheel.

P P are guide-rollers for the endless rope or chain M of the power-wheel, the said rollers being journaled in the parallel side bars Q Q, the latter having a suitable support on the pulley-block A. Adjustably secured at one end to a projecting arm of the pulley-frame is a clamping-band R, which partially encircles the periphery of a circular flange S on the inner face of the wheel L and has its other end connected with one limb of a lever T. The said lever, which is pivoted to the pulley-frame, has its other limb provided with a projecting lug U, adapted to be engaged by a lug V of the yoke W, mounted on the eccentric X on the pulley-block encircling the shaft D, the said yoke having an operating arm or lever Y, with rope Z. To an arm A' of the said eccentric X is pivoted a shoe B', adapted to bear against the inner wall of the flange S, and to the said eccentric is secured an arm C', having an attached weight D', normally keeping the lug V from engagement with the lug U.

To adjust the band R, one end thereof is connected with a screw-threaded rod E', which

is loosely inserted in a support and has a nut F' working on the screw-threads and bearing against the support.

In Fig. 6 is shown a modification of the lower guiding and binding rollers for the pulley, the rollers G', having the bars H', in which they are journaled, movable endwise in slots J' in the walls of the pulley, whereby the rollers are automatically adjusted for different thicknesses of rope.

The manner of operating the device is as follows: The weight to be lifted is secured to the hook K' of the lower pulley-block L', the rope M' being passed around the sheave N' thereof and the sheaves B and E, as shown in Fig. 4, the clamping or friction mechanism being in the position shown in Fig. 2. The endless rope or chain M is now operated, rotating the wheel L and with it the shaft D and thereby the sheave E, so that the sections of the rope M' are either shortened or lengthened, according to the direction of rotation of the wheel L, and thereby the block L' either raised or lowered.

The size of the wheel L relative to the sheave E substantially determines the increased power or speed given to the pulley, and, as may be noticed, may be of any practicable diameter.

When it is desired to check the speed of the wheel L in lowering a weight, the arm Y is lowered by means of the rope Z, so that the yoke W is rotated on the eccentric X, bringing the lug V of the yoke in contact with the lug U of the lever T, thereby oscillating the said lever and drawing the band R against the periphery of the flange S of the wheel. When the rope Z is released, the weight D' of the arm C' oscillates the yoke, so that the lug V no longer bears against the lug U and the lever T returns to its normal position, releasing the band R from contact with the flange S. At the same time the shoe B' is moved into close contact with the inner side of the flange S, so that a check is had upon the movement of the wheel L at all times when the brake or clamping-bar R is not in operation.

It is necessary to move the shoe B' out of contact with the flange S when hoisting, and to accomplish this the lever Y is slightly depressed by means of the rope Z, but not to such a degree as to cause the brake-band R to bind, as in lowering.

Owing to the bars H' being free to move in the slots J' of the walls of the pulley-block, the rollers adjust their position automatically relative to the ascending and descending portions of the rope M.

During the operation of the device when the automatic adjustable rollers are employed the upper roller H is not in use, being only needed in holding the rope in the groove of the sheave when a weight is not depending from the device.

It will be noticed that the flange might be

connected directly with the sheave without an interposing power-wheel, so that the brake may operate directly on the said sheave.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A pulley-block having a power-wheel connected with one of the sheaves thereof by the same shaft and a separate shaft in line with the aforesaid shaft, on which the remaining sheaves are mounted, substantially as described.

2. A pulley-block having a power-wheel connected with one of the sheaves thereof by the same shaft, and a separate shaft in line with the aforesaid shaft, on which the remaining sheaves are mounted, and a brake mechanism for said power-wheel, said parts being combined substantially as described.

3. A pulley-block having a series of sheaves loosely mounted on a shaft, a separate rotary shaft in line with and abutting against the aforesaid shaft and having a sheave keyed thereon, and a power-wheel secured to said last shaft and thereby having its axis in line with the axis of said sheaves, said parts being combined substantially as described.

4. A pulley-block having a rotary shaft with a sheave keyed thereon having a peripheral groove, a power or speed wheel rotatable with said sheave and having a projecting flange, a band secured to a pivoted lever at one end and having a stationary adjustable support at the other end, and an eccentric, substantially as described, for engaging and operating said lever so as to clamp said band against said flange, said parts being combined substantially as described.

5. A pulley-block with a sheave journaled therein, a power-wheel connected and rotatable with said sheave, a projecting flange on said wheel, a band adapted to bear against said flange, a pivoted lever connected to the loose end of said band, and an eccentrically-operating arm with lug for engaging said lever, said parts being combined substantially as described.

6. A pulley-block with a power or speed wheel connected to a sheave thereof, a flange on said wheel, an eccentric on the pulley-block and encircling the shaft of said speed-pulley, and a yoke on said eccentric having a weighted arm and a pivoted shoe, the latter adapted to bear against the said flange, said parts being combined substantially as described.

7. A pulley-block with slots in its walls, bars movable endwise in said slots, and guiding and binding rollers for the rope journaled in said bars, said parts being combined substantially as described.

THOMAS W. R. McCABE.

Witnesses:

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