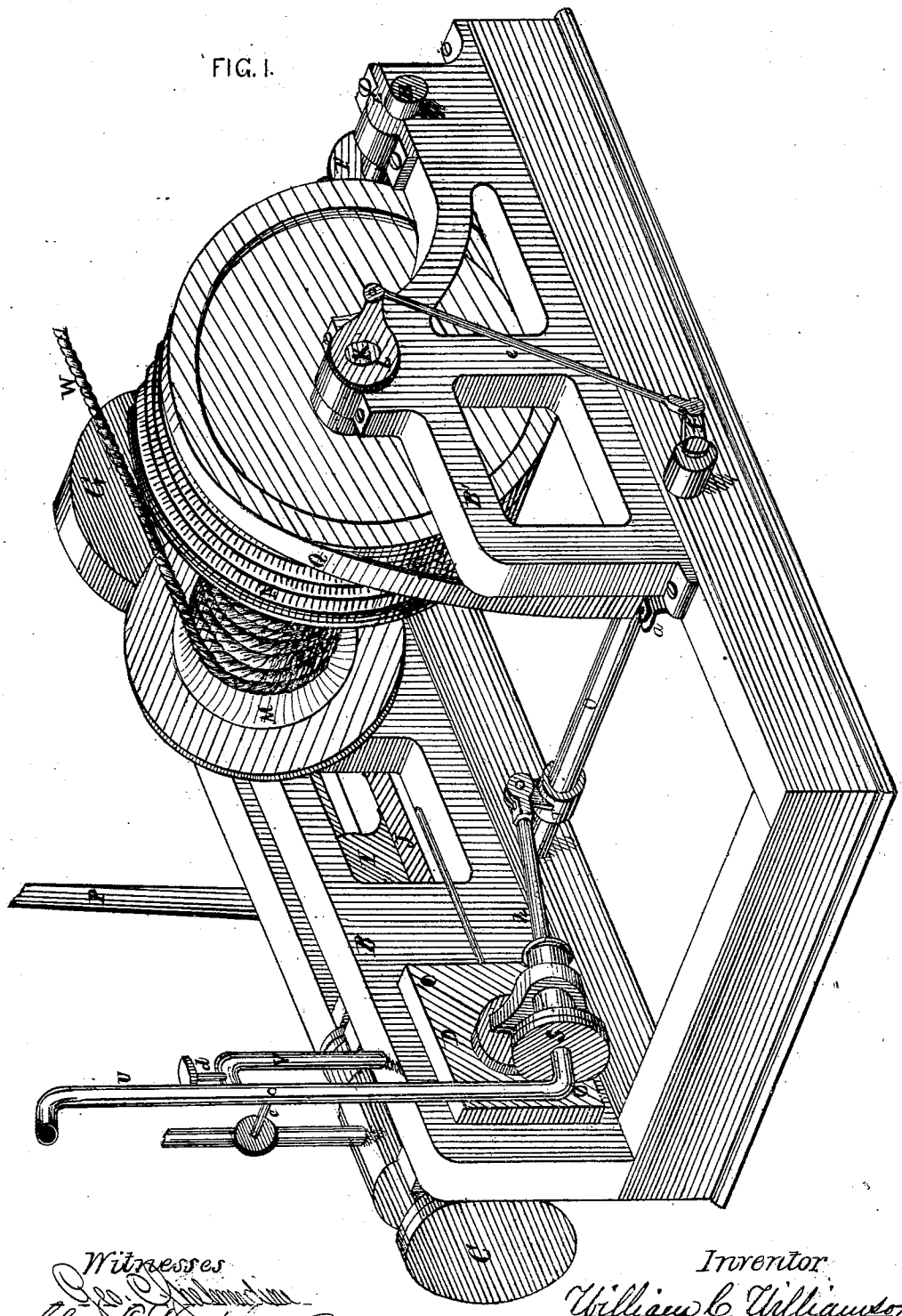
3 Sheets--Sheet 1.

WILLIAM C. WILLIAMSON.

Improvement in Hoisting Apparatus.

No. 127,726. Patented June 11, 1872.

FIG. 1.



Witnesses

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FIG 2

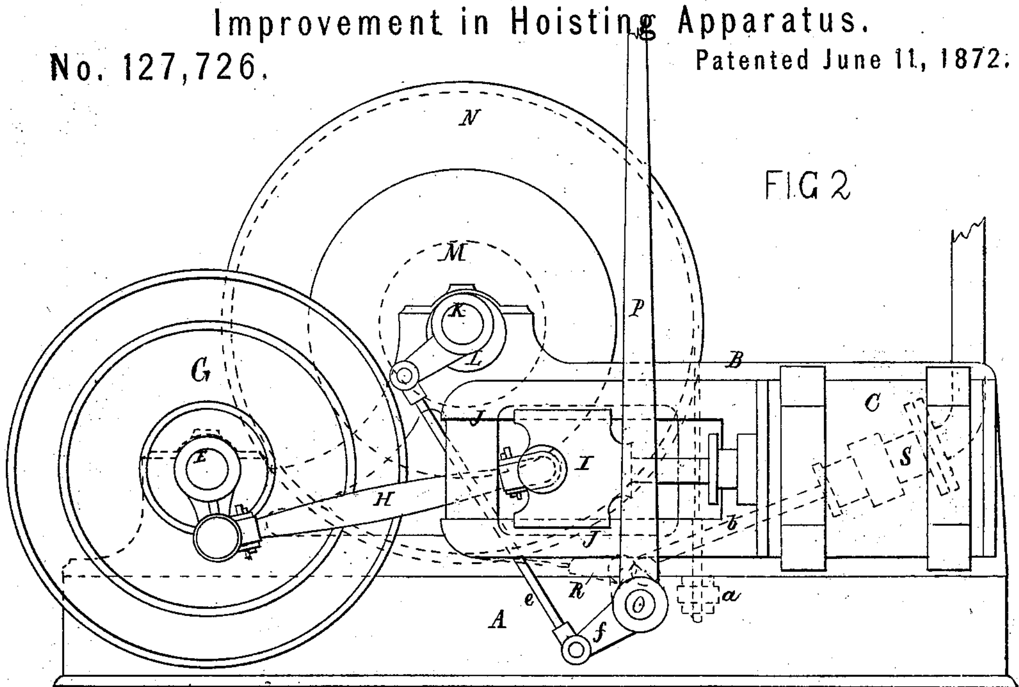
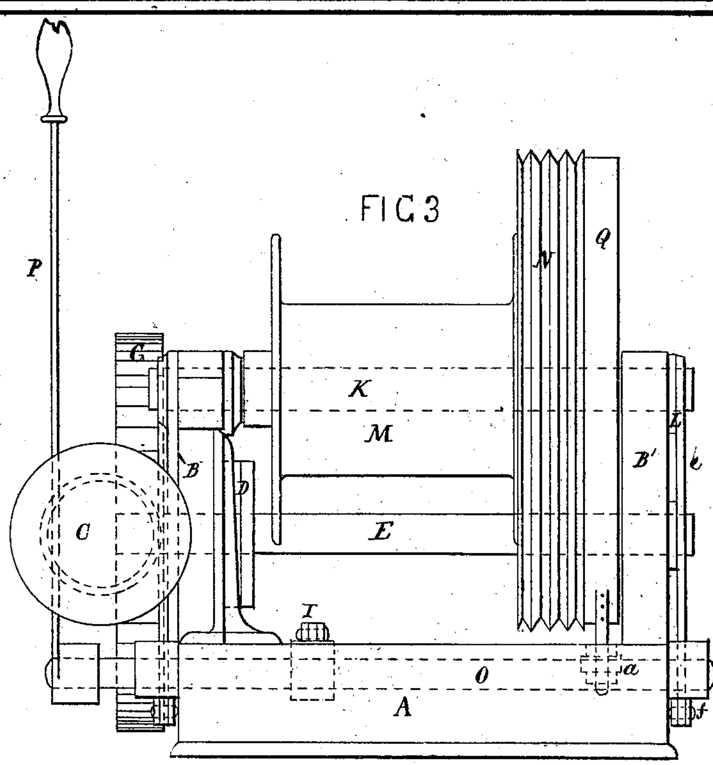


FIG 3



WITNESSES

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3 Sheets--Sheet 3.

WILLIAM C. WILLIAMSON.

Improvement in Hoisting Apparatus.

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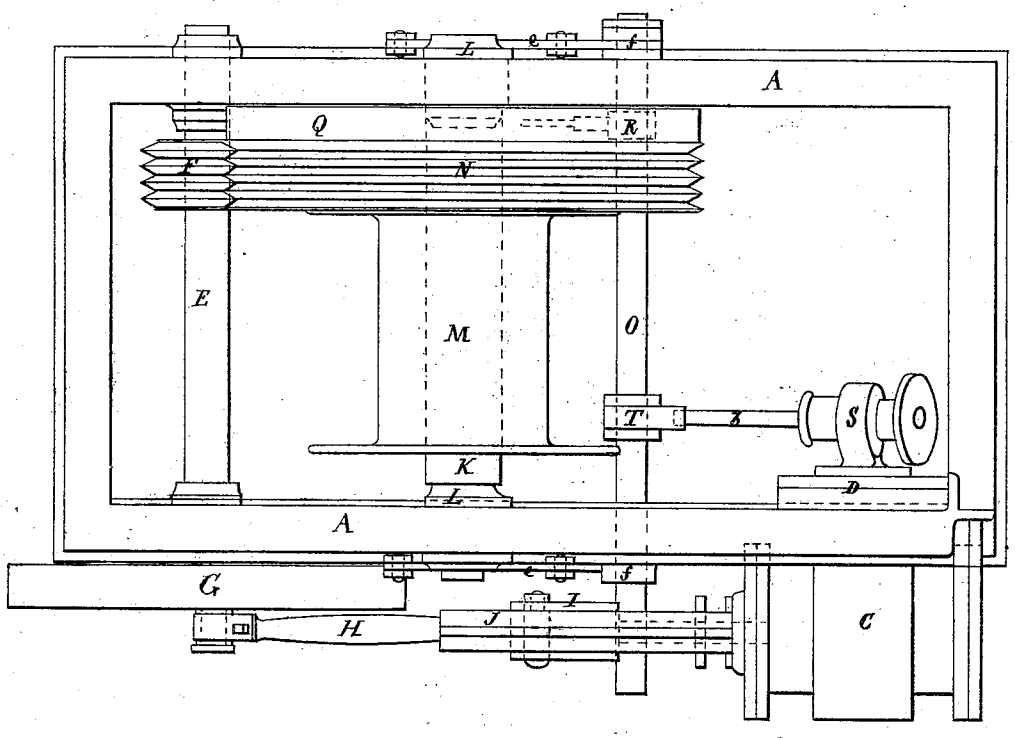
FIG 4



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM C. WILLIAMSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HOISTING APPARATUS.

Specification forming part of Letters Patent No. 127,726, dated June 11, 1872.

Specification describing an Improved Hoisting-Engine, invented by WILLIAM C. WILLIAMSON, of the city and county of Philadelphia and State of Pennsylvania.

This invention relates to a hoisting-engine, in which the closing of the regulating-valve, the throwing out of contact of the grooved friction-wheels, and the brakage of the drum, are accomplished simultaneously by the operation of a single hand-lever, which also operates to slow down the engine immediately when the brake is put on.

Figure 1 is an isometrical perspective. Fig. 2 is a side elevation. Fig. 3 is an end elevation. Fig. 4 is a plan view.

A is the bed-plate of the engine. B B′ are frames or housings on and at opposite sides of the same. C is a steam-cylinder bolted to the outer side of the housings B; its steam-chest D is on the inner side. E is a transverse shaft at the front end of the machine. It turns in suitable journal-boxes on the housings. At one end, within the bed-plate, it has the pinion grooved wheel F, while at the other it has the balance crank-wheel G, which, by means of the rod H, connects with the cross-head I working in the guides J of the engine. K is a transverse shaft which turns in the eccentric crank journal-boxes L in bearings of the housings. It is situated above and between the steam-cylinder C and the shaft E; it carries the drum M and the spur-grooved wheel N which meshes into the pinion F. O is a rock-shaft placed transversely of the machine. Below and between the steam-cylinder C′ and the shaft K it turns in suitable boxes, and is operated by means of the lever P. Q is a brake-strap which takes over a flange of the spur-grooved wheel N; one end of it is attached to the crank R of the shaft O; the other end is attached to the lug *a* of the housing B. S is a regulating-valve connecting with the steam-chest D; its valve-stem *b* connects either directly with the pin of the crank T on the rock-shaft O, or through the intervention of a connecting-rod. U is a steam-pipe from the boiler to the regulating-valve S. V is a pipe leading from the pipe U to the steam-chest D. The flow of steam to the regulating-valve S is controlled by the stop-valve *c*, and the flow of steam to the steam-chest, by the valve *d*. The rope W of the drum leads to the hold of a ship or other place from which anything is to be raised.

Before commencing to lift, the lever P is turned toward the steam-cylinder, which movement turns the rock-shaft O and thereby causes the rods *e e*, connecting with the cranks *f* on both ends of the shaft and the crank-eccentrics L, to turn the said eccentrics in their bearings, which parts the shaft K from the shaft E, and thus breaks the contact of the grooved wheels F N. The valve *c* is shut down, (or not, according to the disposition of the engineer—it can be used open, and also differently located—) thereby cutting off the steam from the regulating-valve S. The valve *d* is opened to admit sufficient steam to the steam-chest D to slowly run the unloaded engine. On the lever P being thrown forward the grooved wheels mesh, the regulating-valve S opens simultaneously, (when the valve *c* is closed it must be opened before the valve S can admit steam to the cylinder,) and the drum winds or takes up its rope. When the load is raised to the required height the lever P is thrown back, which disconnects the grooved wheels, closes the valve S, and stops the drum M by tightening the brake-strap. The engine continues to move slowly, receiving, as before shown, its steam through the pipe V; by easing on the lever P the drum, by the weight of the load, unwinds at a speed commensurate with the degree of pressure of the brake-strap on its flange. The regulating-valve S has sufficient lap to shut off the steam from that source when the lever is at mid gear or in a vertical position—that is, when the drum is in such position that the grooved wheels do not mesh and the brake-strap does not bind on its flange.

The steam-chest valve is worked by an eccentric and rod, as usual. The regulating or operating valve S can be a valve of almost any construction. It must have sufficient lap to permit the drum to unwind and at the same time be conditioned for admitting steam to the steam-chest D the instant the grooved wheels mesh.

I claim as my invention—

1. A hoisting-engine, in which the operations of throwing out of contact the friction or gear wheels, the braking of the drum-shaft, and shutting off the steam, are accomplished simultaneously by means of a single lever.

2. The combination and arrangement of the drum-shaft K, eccentrics L, drum M, spur-wheel N, rock-shaft O, lever P, strap Q, crank R, side-rods *e*, and the cranks *f*, as shown and described.

In testimony whereof I hereunto sign my name in presence of two subscribing witnesses.

WILLIAM C. WILLIAMSON.

Witnesses:

GEO. SHELMERDINE,

FRANCIS D. PASTORIUS.